LIST OF MEMBERS
of
NATIONAL PLANNING COMMITTEE

(Including Representatives of Governments)

JAWAHARLAL NEHRU (Chairman)

Sir M. Visveswaraya, (Resigned)
Sir Purshottamdas Thakurdas
Dr. Megh Nad Saha
A. D. Shroff
A. K. Shaha
Dr. Nazir Ahmad
Dr. V. S. Dubey
Ambalal Sarabhai
N. M. Joshi

J. C. Kumarappa, (Resigned)
Walchand Hirachand
Dr. Radha Kamal Mukerjee
Prof. J. C. Ghosh,
Hon'ble Mr. Shuaib Qureshi
Rani Laxmibai Rajwade
Abdur Rahman Siddiqui
Gulzarilal Nanda
Mrs. Vijayalakshmi Pandit

K. T. Shah, (Hon. Gen. Sec.)

Ex-officio Members

Hon. Mr. V. V. Giri, Minister for Industries, Madras
Hon. Mr. L. M. Patil, Minister for Industries, Bombay
Hon. Dr. Syed Mahmud, Minister for Education and Development, Bihar
Hon. Mr. C. J. Bharuka, Minister for Industries, Central Provinces

Representatives of Governments

Director of Industries, Bombay
Director of Industries, Bihar
Director of Industries, Assam
Minister in Charge of Industries, Bhopal
Director of Industries, Hyderabad, Dn.
Director of Industries, Mysore
Development Commissioner, Baroda

NATIONAL HEALTH

NATIONAL PLANNING COMMITTEE SERIES

Rural Marketing and Finance
River Training and Irrigation
Soil Conservation and Afforestation
Land Policy, Agricultural Labour and Insurance
Animal Husbandry and Dairying, Horticulture and Fisheries
Crops—Planning and Production
Rural and Cottage Industries
Power and Fuel
Chemical Industries
Mining and Metallurgical Industries
Manufacturing Industries
Industries connected with Scientific Instruments and Engineering Industries
Labour
Population
Trade—(Internal and Foreign)
Industrial Finance
Public Finance
Currency and Banking
Insurance (Individual and Social)
Transport (Road, Rail, Air and Water)
Communications (Posts, Telegraphs, Telephones and Radio)
National Housing
National Health
Education—General and Technical
Woman's Role in Planned Economy
NATIONAL PLANNING, ITS PRINCIPLES & ADMINISTRATION *K. T. Shah.*

NATIONAL PLANNING COMMITTEE SERIES

(Report of the Sub-Committee)

NATIONAL HEALTH

Chairman
Col. S. S. SOKHEY

Secretary
Dr. J. S. NERURKAR

Edited by
K. T. SHAH
Honorary General Secretary
NATIONAL PLANNING COMMITTEE

VORA & CO., PUBLISHERS LTD.

First Edition, December 1948

To

All Those

MEMBERS OF THE NATIONAL PLANNING COMMITTEE

and of

Its Various Sub-Committees

A TRIBUTE OF APPRECIATION

प्रारब्धमुत्तमजना न परित्यजन्ति

PERSONNEL OF THE SUB-COMMITTEE ON NATIONAL HEALTH

Chairman

Col. S. S. Sokhey, I.M.S.

Secretary

Dr. J. S. Nerurkar

Members

Dr. Bidhan Roy
Dr. Salim Uzman Siddiqui, D. Phil. Nat.
The Rev. Fr. J. F. Caius, S. J.
Dr. G. V. Deshmukh, M.D., F.R.C.S.
Dr. J. C. Ray
Rani Laxmibai Rajwade
Col. S. Abdur Rahman, M.B., Ch. B.
Dr. J. K. Kripalani, I.M.S. (Retd.)
Dr. N. M. Jaisoorya, M.D.
Syed Fakhruddin Hussain Khan
Dr. M. Farooq
Dr. Mangaldas J. Shah, M.B., B.Sc., M.R.C.P., D.T.M. & H.
Shri N. V. Phadke (Delegate of the Labour Sub-Committee)

PREFACE

The National Planning Committee, appointed in 1938, began its work early in 1939. After defining the nature of a National Plan, and determining the nature and scope of the work entrusted to them, the Committee issued an elaborate and comprehensive Questionnaire which was subsequently supplemented by specific details. Twenty-nine Sub-Committees, formed into eight groups, were set up with special terms of reference to deal with all parts and aspects of the national life and work in accordance with a predetermined Plan.

After some unavoidable delay in getting replies to the Questionnaire, the Sub-Committees began their work, and submitted Reports,—some of them Final, some Interim,—which were considered at the Plenary Sessions of the Parent Committee in 1940. Towards the end of that year the Chairman, Pandit Jawaharlal Nehru, was arrested and sentenced to a long term of imprisonment, during which the work of the Committee had necessarily to be suspended.

On his release a year later, hope revived for an intensive resumption of the Committee's work. But the outbreak of war with Japan, the threat to India's own safety, and the hectic march of political events, rendered it impossible to devote any attention to such work at that time. It, therefore, inevitably went into cold storage once again; and remained for the duration of the war.

When at last the War seemed nearing its end, Pandit Jawaharlal Nehru with other leaders was released. The moment seemed again opportune to resume the work of the Planning Committee. Meetings of that Body were held in September and November 1945, when certain more urgent questions, already included in the programme of the National Planning Committee, were given a special precedence. A Priority Committee was appointed to report upon them. Changes and developments occurring during the War had also to be taken into account; and another Committee was appointed to review the general instructions, given six years earlier to the Sub-Committees. Revised instructions were issued to them following the Report of this Sub-Committee; and the Chairmen and Secretaries of the several Sub-Committees were once again requested to revise and bring up to date such of the Reports as had already been submitted—either as final or interim—while those that had not submitted any reports at all were asked to do so at an early date.

As a result, many of the Sub-Committees which had not reported, or had made only an Interim Report, put in their Reports, or finalised them. The Parent Committee has had no chance to review them, and pass resolutions on the same. But the documents are, by themselves, of sufficient value, prepared as they are by experts in each case, to be included in this Series.

The following Table shows the condition of the Sub-Committees' work, and the stage to which the Planning Committee had reached in connection with them.

		N.P.C. Resolutions	Not considered by N.P.C.	N. P. C. Resolution	Not considered by the N.P.C.	
Group I.	**Agriculture & other Sources of Primary Production**	Handbook Pp.		Handbook Pp.		
1.	Rural Marketing and Finance	97-99				
2.	River Training and Irrigation Part I	83-85				
	" " " Part II	113-115				
3.	Soil Conservation and Afforestation	115-119				
4.	Land Policy and Agriculture			139-141		
5.	Animal Husbandry and Dairying	87-89				
6.	Crop Planning and Production				do.	do.
7.	Horticulture	102-103				
8.	Fisheries		do.			
Group II	**Industries or Secondary Sources of Production**					
1.	Rural and Cottage Industries					
2.	Power and Fuel		do.			
3.	Chemicals					do.
4.	Mining and Metallurgy			77-79		
5.	Engineering Industries	75-77		130-133		
6.	Manufacturing Industries		do.			
7.	Industries connected with Scientific Instruments		do.			
Group III	**Human Factor**					
1.	Labour	89-92				
2.	Population	85-87				
Group IV	**Exchange and Finance**					
1.	Trade					
2.	Public Finance			130		do.
3.	Currency and Banking			122-126		
4.	Insurance			93-95		
Group V	**Public Utilities**					
1.	Transport			95-97		
2.	Communications	126-129		120-122		
Group VI	**Social Services—Health and Housing**					
1.	National Housing	99-100				do.
2.	National Health			152-154		
roup VII	**Education**					
1.	General Education			138-139		
2.	Technical Education				do.	
Group VIII	**Woman's Role in Planned Economy**	154-160				

To sum up, fourteen Sub-Committees had made final reports, of which ten have been considered, and Resolutions taken upon them, by the National Planning Committee. Twelve more have presented Interim Reports, of which nine have been considered by the Planning Committee, with Resolutions thereon, while three Sub-Committees have not yet presented any report on the reference made to them.

The idea that all this material, gathered together with the help of some of the best brains in India in the several departments of our national life, should be printed and published was before the Committee from the start. But the interruption caused by the war prevented its realisation. It was once again mooted in 1941; but the moment was not deemed ripe then for such action, partly because the leading spirits in almost every one of the Sub-Committees were unable to devote time and labour to bring their Reports up-to-date; and partly also because war-time restrictions or shortages had made scarcer than ever before the statistics and other facts, which particular sub-committees would need, to bring their work up-to-date. The war-time needs of Government had attracted several of them to work on Government Bodies, Panels, or Committees. For all these reasons it was deemed undesirable that material of this character—valuable as it must be—should be put out in an incomplete, inchoate, obsolete form, which may reflect unfavourably upon Indian capacity for such tasks.

The last four years of the War were thus a period of suspended animation for the National Planning Committee. Even after the end of the war, it has not been feasible, for obvious reasons, for the Planning Committee to resume its work and finalise decisions. Continuous sessions of that body are indispensable for considering and taking decisions on the Sub-Committee reports presented since 1940, and putting all the material into shape, ready for publication, not to mention making its own Report; but the political situation in the country made it impossible. Other conditions, however, are somewhat more favourable than in 1938-39, when the Central Government of the country were all but openly hostile to such attempts. Lest, however, the momentary difficulties make for needless further delay, it was thought advisable by the Chairman and the undersigned that no more time should be lost in putting this material before the Public. Following this advice, it is now proposed to bring out a complete Series of the National Planning Committee's Sub-Committee Reports, which will severe as appendices to the Parent Committee's own Report. The Plan of the proposed enterprise is briefly summarised below.

Every Sub-Committee's Report, which is in a final form and on which the National Planning Committee has itself taken resolutions, will be edited and published, with an Introduction assigning their due importance to the suggestions and recommendations contained in that particular report, its proper place in the over-all National Plan; and following it up, wherever necessary, by a kind of Epilogue, summarising the developments that have taken place during the seven years, during which the work of the Planning Committee had been in suspension.

Those Reports, again, which, though in a final form, have not yet been considered, and no resolutions taken thereon, by the Planning Committee, will also be included in the Series in the form in which they were submitted, with such Introduction and Epilogue to each as may be deemed appropriate. And the same treatment will be applied to Reports which are 'Ad Interim', whether or not the Parent Committee has expressed any opinion on the same. They will be finalised, wherever possible, in the office, with such aid as the Chairman or Secretary of the Sub-Committee may be good enough to render. Sub-Committees finally, which have not submitted any Report at all, —they are very few,—will also find their work similarly dealt with. The essence, in fine, of the scheme is that no avoidable delay will now be suffered to keep the National Planning Committee's work from the public.

Both the Introduction and the Epilogue will be supplied by the undersigned, who would naturally be grateful for such help as he may receive from the personnel of each Sub-Committee concerned. The purpose of these additions is, as already stated, to assign its true place to each such work in the over-all Plan; and to bring up the material in each Report to date, wherever possible.

Not every Sub-Committee's Report is sufficiently large to make, more or less, a volume by itself, of uniform size, for this Series. In such cases two or more Reports will be combined, so as to maintain uniformity of size, get-up, and presentation of the material. The various Reports, it may be added, would not be taken in the order of the classification or grouping originally given by the Planning Committee; nor even of what may be called the intrinsic importance of each subject.

In view of the varying stages at which the several Reports are, for reasons of convenience, it has been thought advisable to take up for printing first those which are final, and on which the Planning Committee has pronounced some resolutions. Printing arrangements have been made with more than one Press, so that two or three Reports may be taken simultaneously and published as soon as possible so that the entire Series may be completed in the course of the year.

Two other Sub-Committees, not included in the list of Sub-Committees given above, were assigned special tasks of (1) preparing the basic ideas of National Planning; and (2) outlining the administrative machinery deemed appropriate for carrying out the Plan. These were unable to function for reasons already explained. The present writer has, however, in his personal capacity, and entirely on his own responsibility, published the "Principles of Planning" which attempt to outline the fundamental aims and ideals of a National Plan. This remains to be considered by the Planning Committee. Similarly, he has also attempted to sketch an administrative machinery and arrangements necessary to give effect to the Plan, when at last it is formulated, and put into execution. Notwithstanding that these two are outside the Scheme outlined in this Preface, they are mentioned to round up the general picture of the arrangements made for publication of the entire work up-to-date of the National Planning Committee and its several Sub-Committees.

The several volumes of Sub-Committee Reports, when published, will be treated as so many appendices to the Report of the parent body, the National Planning Committee. It is impossible to say when that Committee, as a whole, will be able to hold continuous sessions, review and resolve upon Sub-Committee Reports which have not yet been considered, and lay down their basic ideas and governing principles for an all over Plan, applicable to the country, including all the facts of its life, and all items making up the welfare of its people.

The disturbed conditions all over the country, and the Labour unrest that has followed the end of the War has caused unavoidable delays in printing and publishing the several volumes in the Series, which, it is hoped, will be excused.

In the end, a word of acknowledgment is necessary to put on record the aid received by the Editor in the preparation and publication of this Series. All those who are associated in the task,—members of the Parent Committee, or as Chairmen, Secretaries or Members of the various Sub-Committees,—have laboured wholly, honorarily, and consistently striven to give the best that lay in them for the service of the country. Almost all Provincial Governments and some States,—the latter twice in some cases,—have made contributions towards the expenses of this office, which have been acknowledged and accounted for in the Handbooks of the Planning Committee, published earlier. Suitable appreciation of these will be expressed when the Parent Committee makes its own Report. At almost the end of its task, the expenditure needed to edit, compile, and otherwise prepare for the Press, the several Reports, has been financed by a Loan by Messrs. Tata Sons Ltd., which, even when repaid, will not diminish the value of the timely aid, nor the sense of gratitude felt by the undersigned.

Bombay, 1st July 1947. K. T. Shah.

Note:—In the Scheme of this Series, originally given, more than one Report was intended to be included in one volume in some cases. The combinations indicated in the circular, of the 20th of June 1947, had had to be modified as the printing of several Reports proceeded.

When about half the volumes were printed, it was found that that scheme would not give a fairly uniform series. The new arrangement is given on the page facing the title page. Some changes have had to be made in that list e.g., the separation of the two Reports on Public Health and National Housing, intended to be in one volume, are now in separate volumes.

Conversely, only the two Reports on Animal Husbandry and Dairying and on Fisheries were intended to be combined. As now decided, the Report on Horticulture is also included in the same Volume.

Again, the original combination of the Report on Mining and Metallurgy with that on Engineering Industries has been modified. The latter now combined with the Report on Industries Connected with Scientific Instruments, which was originally meant to be a separate volume, while the former is to be by itself.

31st January, 1948. **K. T. S.**

CONTENTS

Page

Preface—K. T. Shah 9

Introduction—K. T. Shah 17

Report of the Sub-Committee 37

Appendix I—Col. S. S. Sokhey 53

Appendix II—Dr. J. C. Ray 58

Appendix III—S. F. Khan 71

Appendix IV—L. Rajwade 119

Appendix V—L. Rajwade 158

Appendix VI—Rev. F. Caius 164

Appendix VII—Dr. S. Siddiqui 171

Appendix VIII—Col. S. A. Rahman 177

Appendix IX—Compilation of Vital Statistics) .. 194

Appendix X—(Report of the Medicinal Preparation Sub-Committee—I.C.M.A.) 202

Planning for a New India—Food of the People—Col. S. S. Sokhey 219

Resolutions of the N.P.C. 225

Summary of Developments—K. T. Shah 228

INTRODUCTION

This Sub-Committee on Public Health was appointed to consider the following Terms of Reference:—

(a) prescribing standards of dietary and nutrition for all classes of population;
(b) consideration of the nature and incidence of the various epidemics which take a heavy toll of life, and suggestion of ways and means for guarding against these scourges;
(c) investigation into the volume and causes of infant mortality, as well as mortality among women; and suggestion of ways and means of reducing such mortality;
(d) provision of the necessary health units, comprising physicians, nurses, surgeons, hospitals and dispensaries, sanatoria and nursing homes;
(e) health insurance;
(f) medical training and research;
(g) compilation of vital statistics, including those of birth and death rates;
(h) cultivation of the necessary drugs and production of medicines to provide the necessary preventive or curative aid, scientific and surgical appliances and accessories of the National Health Services; and
(i) any other questions connected therewith.

Nature Of the Problem

The problem of Public Health in this country is varied and complex. Every observer since the middle of the last century at any rate has noticed that the people of India in general are of poor physique, low vitality, and of short life-span. They suffer chronically from certain common diseases and have their vitality undermined by frequent epidemics of a devastating virulence. Some indices are given below to show the justice of these beliefs in the actual life of the country.

The root cause of disease, debility, low vitality and short span of life is to be found in the poverty,—almost destitution,—of the people, which prevents them from having sufficient nutrition, clothing and shelter. Every calculation of the wealth of this country, or of its **per capita** income per annum, shows barely 4 as. per day, or Rs. 80 per head per annum. Translated into terms of the necessaries of life, this means barely sufficient to provide one meal per day, and that of the coarsest material, without anything left over for clothing or shelter, not to speak of education or amusement. That is why it sounds a queer irony and a cruel mockery when public health enthusiasts speak of compulsory physical training in our schools and colleges, of balanced dietary, of sufficient and varied food and drink, clothes and house room, with a view to promote public health in the masses of India. No wonder then that their general information and knowledge regarding conditions of health is rudimentary; and so their means to guard against preventable disease and consequential debility are all but non-existing. Several diseases which are recurrent, almost epidemic, are constantly cropping up, even though modern science and medical technique have discovered ways and means effectively to prevent them, or immunise the human system against their attack. Small-pox can be eliminated; plague or cholera innoculated against; malaria abolished or cured by specifics; tuberculosis, blindness, leprosy guarded against or effectively treated; which for lack of adequate wealth cannot be so dealt with. That is why the tragedy of low vitality and long suffering becomes grimmer and greater, because it is all so unnecessary, so easily avoidable, so effectually curable.

Causes Of Low Index Of National Health

Apart from this root cause, there are several other factors also responsible for this phenomenon. The progress of industrialism unplanned and uncontrolled; some of our social customs, habits and institutions; sometimes also the visitation of Nature in the shape of famines, earthquakes, floods, etc., are also responsible in their several ways for disease and debility.

The growth of industrial centres, and the congestion of population that results therefrom, are fatal to the maintenance of good health for people, who, till then were accustomed to the open-air village life, but who are couped up in their new abodes within the four walls of a small room, in crowded barracks of houses which are known as tenement chawls in places like Bombay. The sun does not shine, nor can air enter, into these cubby holes. Smoke from cowdung fuel fills the atmosphere from the primitive **chulas**, on which the inhabitants have to prepare their daily food. The result is inevitable. Eyes are for ever sore and smarting, throat irritated, nose flowing, lungs affected. And wherever there is any possibility of communicable diseases, it reaps the greatest harvest under those conditions.

Social customs and institutions of the people in India are no less accountable for the low standard of public health in the country. The institution of premature marriages is common to all communities though usually denounced as the special curse of the Hindu society. Pre-puberty marriage has been a religious injunction, which, however, was considerably neutralised by the parties cohabiting only after puberty was attained by the girl. But even so the drain on virility, started too early and continued without restraint, naturally affected the vital springs, and dried up the powers of resistance to disease, which is responsible for the generally low level of public health. Another consequence of early marriage was excessive frequency of births that particularly affected the health and vitality of the woman. Too many and too frequent births added to the prevailing poverty, which meant heavy infant mortality and great loss of women in the fullness of their natural function.

Beginnings of a Public Health Service

The British Government in India had their attention drawn to these conditions and their tragic consequences, primarily because of the surface observation of the rate of mortality in that section of the Indian people which they came directly in contact with, namely, the Indian Army. The sepoy, a sample of the Indian people, lived under social conditions and environment which naturally meant poor efficiency. Not only had living conditions to be improved; but medical attendance, advice and treatment had to be extended if the Indian Army and the Civil Administration were to be worth the money spent upon them.

It was because of this that, after the Mutiny of 1857, a Royal Commission was appointed in 1859, and its specific recommendations put into effect in 1864, that special Commissioners of Public Health in the three

Presidencies were appointed to study the problems. These, however, were stationed at headquarters, and could scarcely study the problems of village sanitation, which then, as now, constitute the most difficult group of problems in this connection. Thirty years went by, during which the congestion of population in industrial centres went on growing, while the progressive impoverishment of the people emphasised not only the general insanitary conditions prevailing in the villages, but also added to the risks of infection from communicable diseases by repeated contacts with their cousins who had migrated to the industrial centres.

In 1888, another Commission drew attention to the conditions regarding public health in villages, and called upon Local Bodies to make arrangements for substantial improvement of those conditions. The official enquiry, however, laid the blame on the general apathy of the people and particularly the social customs which were injurious to Public Health. In matters of public health and sanitation, there are many shortcomings in villages and smaller towns, such as lack of clean and abundant water supply, liability to epidemics, poor housing, insufficient food or nourishment, which may account for the virulance of repeated epidemics. "The village house is usually a thatched hut ill-ventilated and over-littered with human and animal necessaries; the village site dirty, crowded with cattle, choked with rank vegetation, and poisoned by stagnant pools; and the village tanks polluted, its water used indiscriminately for bathing, cooking, and drinking. That the way to improvement lies through the education of the people has always been recognised.

The maintenance of the public health requires the fulfilment of certain fundamental conditions, which include the provision of an environment conducive to healthful living, adequate nutrition, the availability of health protection to all members of the community, irrespective of their ability to pay for it, and the active co-operation of the people in the maintenance of their own health. The large amount of preventable suffering and mortality in the country is mainly the result of inadequacy of provision in respect of these fundamental factors. Environmental sanitation is at a low level in most parts of the country; malnutrition and undernutrition reduce the vitality and power of resistance of an appreciable section of the population; and the existing health services are altogether inadequate to meet the needs of the people, while lack of general education and health education add materially to the difficulty of overcoming the indifference and apathy with which the people tolerate the insanitary conditions around them and the large amount of sickness that prevails.

Diet surveys carried out in the different parts of the country have shown, in typical urban and rural groups, that the food consumed is insufficient to provide the necessary energy requirements in the case of some 30% of the families; that the diet is almost invariably ill-balanced; and that there is, in terms of food factors, a deficiency of fats, vitamins and proteins of high biological value. The statistics of food production in India show a considerable margin of error; but such figures as are available suggest that, in regard to cereals which form the staple article of diet, the deficiency may be of the order of 22% of the country's requirements. For other articles, such as vegetables, fruits, milk, meat, fish and eggs, the quantities now produced will have to be increased several times before adequate amounts will become available for the proper nutrition of the people.

While the extent of provision of hospitals and dispensaries in urban and rural areas varies considerably among the provinces, the rural population has everywhere been less adequately provided for than the urban. The inhabitants of the rural areas live more widely dispersed than those of the urban, and the medical aid given by an institution becomes more restricted. In the United Provinces, for instance, one institution serves an average population of 105,626 distributed over an average number of 226 villages. And this is typical of all the other parts of the country.

The quality of service rendered by these institutions leaves much to be desired. For instance, the average time given to a patient was noted, during our tours, to be 48 seconds in one dispensary, and about a minute in another. The medical service given to the people under such conditions is bound to be of a perfunctory nature. The medical officers in charge of many dispensaries have, for long periods, been out of touch with modern medical practice without an opportunity to work in a well conducted hospital. Other defects include unsatisfactory conditions in regard to the design of, and accommodation in institutions, considerable overcrowding in the wards, and great insufficiency of the nursing staff. The number of beds available in British India for the treatment of general and special diseases is about 73,000 or about 0.24 beds per thousand population as against 7.14 in England and Wales and 10.48 in the United States.

Some idea of the magnitude of the task to be accomplished in increasing, within the next 25 years, trained personnel of various types in order to provide a reasonably satisfactory health service to the people may be obtained from the following figures.

*Class of Personnel	Number Available now	Ratio of number in (2) to present population 300 millions	Existing Ratio in United Kingdom	Suggested Ratio for Br. India by 1971 with population 370 millions	Number required in 1971
Doctors	47,500	1 to 6,000	1 to 1,000	1 to 2,000	185,000
Nurses	7,000	1 ,, 43,000	1 ,, 300	1 ,, 300	740,000
Health Visitors	750	1 ,, 400,000	1 ,, 4,770	1 ,, 5,000	74,000
Midwives Qualified	5,000	1 ,, 60,000	1 ,, 618	1 ,, 100	100,000
Pharmacists	75	1 ,, 4000,000	1 ,, 3 Doc.	1 ,, 3 Doc.	62,000
Qualified Dentists	1,000	1 ,, 300,000	1 ,, 2,700	1 , 4,000	92,500

We have given existing standards in the United Kingdom, but have suggested for India lower ratios as the targets to be aimed at during the next quarter of a century. The reason is that the available numbers in the various categories of personnel are so small that even the attainment of the suggested ratios by 1972 will involve concerted, intensive and unremitting effort, on an unprecedented scale by the authorities concerned.

While however, the question of public health remained with the Central Government, little progress could be made, beyond the important centres, either by the Central or Provincial Cabinets, or in the headquarters of armies, cantonments, and the like. By the Government of India Act of 1919, however, introducing diarchical government, the subject of Public Health was transferred to the responsible Ministers, who, however, could not do much in this field for lack of sufficient funds, if not of adequate authority also. Further, the Decentralisation that came into force in 1935, under the guise of Provincial Autonomy, gave wider authority to the responsible Ministers under the new constitution. But even there the handicap of insufficient funds continued, with the result that outstanding problems of

---

* See Report, Health Survey and Development Committee.

public health in towns and villages could not be systematically and intensively attacked by the Popular Government. The problem therefore remained in all its intensity and complexity almost untouched up to the eve of national independence in 1947.

At the present time every index of backward sanitary condition is to be found all over the country, and in each part of it. The last Census of 1941 has left much to be desired in the matter of proper vital statistics, to judge of the state of public health in the country. India is very poor in statistical information of all kinds. The Vital Statistics, especially in the large majority of villages, are particularly insufficient or ineffective for lack of sufficient administrative organisation, as well as because of the absence of popular consciousness in the matter of registration of births and deaths, and record of the correct causes of deaths, the age of the deceased, the conditions under which they lived etc. The continuance of the War at the time the last Census was compiled made it impossible to pay greater attention to a correct compilation of appropriate statistics on such subjects. Nevertheless, every indication that is to be found in that regard shows, as the Bhore Committee has recorded, that the state of public health in British India is very low. The wide prevalence of disease and consequent high rate of mortality in the community as a whole, and in particular among such vulnerable groups as children and women in the reproductive age period, are ample and distressing evidence. The death rate in British India was 22.4 per 1,000 in 1937, and for infants or children under one year of age it was 172 per 1,000 live births. In 1941 the corresponding rates were 21.8, and 158 respectively. Comparative statistics have been given in the Bhore Committee Report, which show the general death rate in countries like New Zealand or Australia to be as low as 9.1, whereas the infant mortality in those lands is 31 per 1,000 as against 21.8 and 158 respectively in India.

Because of our comparatively very high death rate, the expectation of life in India is much smaller than in other countries as the following table shows:—

Expectation Of Life At Birth

Country	Males	Females	Year
New Zealand	65.04	67.88	(1931)
Australia	63.48	67.14	(1932-34)
British India	26.91	26.56	(1921-30)

Though New Zealand and Australia are large countries with very small population, and consequently with conditions of healthful living much easier than in India, the wide gulf between the mortality rates in these two countries and ours is sufficiently suggestive of the generally backward condition of public health in this country. India must go a long way before her Health is raised to anything like the standards prevailing in other countries, which are no less industrialised.

It is interesting to note, incidentally, that, wherever Public Health administration has been properly organised, the average expectation of life is as a rule greater amongst women than amongst men. In India, on the other hand, the expectation of life for women is on the whole lower than for men. The result is that notwithstanding the excess of female births over male in the aggregate, and there being a majority of girls over boys up to ten years of age, that majority rapidly declines, till women in the aggregate, all over the country, of all age periods, fall into an unhealthy minority. This is explained by a much higher mortality among women between the age period of 15 to 50, which may rightly be taken to be the reproductive period in their life.

The greatest single cause of female mortality is, of course, child-birth; and that, in its turn, is believed to be brought about by the prevailing social custom, not yet abolished, of excessively early marriages. Marriage unduly early in life, and repeated pregnancies following in its wake at too short intervals, unavoidably leads to the physique of the mother being undermined, and her resisting capacity reduced by excessive child-bearing. The prevailing intense poverty and the absence of adequate medical or nursing attendance intensifies the situation to a dangerous degree. Though marriage before puberty may be regarded as a social institution, enjoined, in a manner of speaking, by the Scriptures, the custom is not confined to that community only. It is copied practically by all communities; and it is only in recent years that the awakening amongst women had led to a steadily rising age for not only formal marriage, but also for actual consummation. It was some years before the Planning Committee was appointed that Legislation was passed fixing the age of consent for women. And though that law may not be strictly followed as much as may be expected, it has gone a considerable way in undermining the institution of execessively early marriage. For the rest, we will have to depend on the spread of general enlightenment, and information about marriage hygiene amongst people, to make them themselves adopt more healthy ways of life in such matters.

High Mortality

In another volume of this Series, that dealing with Population, statistics have been adduced to show the death rate in the various age groups and their composition in India, as given below:—

Death at specific age-periods as percentages of total deaths at all ages.

Under one year	24.3
One to five years	18.7
Five to ten years	5.5
Total under 10 years	48.5

This means that nearly half the population brought into this world does not pass alive its tenth birthday; and that the total population may not expect a life span of 26 or 27 years counting from birth. The death rate, as well as infantile and female mortality, are thus the highest in this country, as compared with many other industrialised countries of the East or the West.

In the latter, it may be added, the tendency has been noticed in recent years by all demographic students of a declining birth rate, and, therefore, a decline in the total population, following upon deliberate restriction of the sizes of families. Marriage unduly deferred, and conscious control of births may also be an explanation.

In India, on the other hand, the consciousness of economic pressure effecting voluntary restriction on births is not even in its infancy; and such as it is, it is confined only to the small section of educated and westernised people. In the five years before the War the birth rate in British India was somewhere about 35 in 1,000.

In	1940	it was	32	per mille.
,,	1941	,, ,,	32	,, ,,
,,	1942	,, ,,	29	,, ,,
,,	1943	,, ,,	26	,, ,,
,,	1944	,, ,,	26	,, ,,

But this decline, though found in practically all Provinces, was not due to any greater awakening and fuller realisation of their responsibility among the people as regards restriction in the size of families. It was rather the outcome of the over-strain during the war, and as such must be taken with great reserve. Such as it is, however, it is concomitant with a proportionate decline in infant mortality, as well as the death-rate amongst women in child-birth. The infantile mortality did fall to 164 per 1,000 in live births in 1935, and to 156 in 1939. In the war years, however, there was a rise again, being 160 in 1940; 158, 163, 165 and 169 in the succeeding years 1941, 1942, 1943, and 1944 respectively.

The death rate, on the other hand, did not show any considerable rise. In the five years before the War the death rate in British India was 28.

In 1940 it was .. 24 per mille.
,, 1941 ,, ,, .. 21 ,, ,,
,, 1942 ,, ,, .. 24 ,, ,,
,, 1943 ,, ,, .. 24 ,, ,,

Modern Trends In Organising Public Health.

The attention to maintaining a high degree of public health is now no longer left to the weak, fitful, unco-ordinated efforts of the individuals affected. It has begun to be increasingly realised that it is the obligation of the community as a whole, the State with an industrial population, with its congregation of large numbers in a few centres, to provide not only the necessary means for curing disease when it occurs, but also for preventing it by bringing about an environment and conditions of living which would prevent the germs of disease taking hold and eradicate them gradually, improving at the same time the resistence capacity of the people concerned. This would be achieved by improved housing conditions, better and more well-balanced diet, and accessibility to and use of open spaces for exercise and fresh air to the large aggregates of people living in modern industrial towns.

At the same time, organised, systematic, collective enterprise to provide the necessary advice and treatment for guarding or improving the health of the individual is made available, not as a matter for the affected individual to obtain for himself, or even as a matter of spasmodic charity, whether by those possessing superfluous riches, or those influenced by altruistic motives of self-sacrifice or public service, but as a matter of right to the individual through an organised public service discharging a common obligation of society towards its members. All matters, which are now commonly considered as part of an un-co-ordinated individual enterprise,—like suitable housing, adequate and healthful food, proper clothing, sufficient leisure for exercise and other demands for the maintenance of health, improved conditions of employment and living—are coming more and more within the general control, regulation, and co-ordination, if not actual direct provision, by the State.

It may be noted, in passing, that, in the United States, and other advanced countries, even if private enterprise is retained as the basis of the social system, that enterprise in its own interest sees to it that all the risks of disease and its handicaps are endeavoured to be remedied by co-ordinated, co-operative effort. For instance, private corporations insuring people for their life, or other contingencies like accident, ill-health, old-age, maternity, etc. use no small portion of their funds to spread proper knowledge of health and of the ways and means of minimising the ills that can be avoided. By this means the margin between the cost of their service and the profit to themselves becomes greater.

As the Bhore Committee has remarked, "a study of the tendencies apparent in some of the more progressive countries of the world in the development of an organised Heatlh Service reveals the modern trend to be towards the provision by the State of as complete a health service as possible, and the inclusion within its scope of the largest possible proportion of the community." Recognising and accepting this principle, the availability of medical benefits or nursing service should not depend upon an individual's ability to pay for them, but that they should be made available equally irrespective of that ability, as a matter of common obligation of the State towards its members. Those members themselves may indeed, quite legitimately, be required to contribute according to their ability, in one form or another, to the improvement in their health and living conditions. But irrespective of that contribution, the State must accept the obligation to provide at least a standard minimum of organised Health service, including advice and treatment to every suffering member of the community. Accordingly, the Bhore Committee has stated its deliberate conclusion "that, under the conditions existing in the country, medical service should be free to all **without distinction**; and that the contribution from those who can afford to pay should be through the channel of general and local taxation."

It may be that the final clause in this pronouncement may be unnecessary or inadvisable to enforce. There will be a demand upon the general and local taxation for other purposes which may include part of the health programme, no doubt. But in so far as active assistance, in the shape of direct financial provision from the public purse is concerned, on hospitals, dispensaries, professional advice, technical apparatus or even sanatoria, nursing homes, asylums for mentally defective, this should be as far as possible derived from the contribution of the individuals insured. It is a healthy principle not only because it teaches people to attend themselves to avoidable causes or conditions of disease; it is psychologically still more valuable because it teaches self-help, eliminates any taint of charity, or unearned dole which any benefit received from general taxation, and not specifically contributed to by the individual concern, is apt to engender.

Contribution levied specifically for the maintenance of the individual's health for himself or for his family engenders a feeling of self-reliance which is of great psychological significance in a progressive society. In Soviet Russia, therefore, the cost of the service is met, at least in part, from Insurance Funds made up of contributions by the members concerned, even though the State provided medical aid is free to all. These contributions are, it is true, not made by individuals or those employing them. The latter deduct from the worker's wages, directly or indirectly, these amounts. The worker therefore, clearly realises that he pays for his own benefit in the event of illness, accident or disability occurring.

National Medical Profession

The problem is more complicated in this country, not only because of the dispersal of the population in a large number of villages, but also because of the small proportion of industrialised workers. Each village, by itself, is a small unit wherein the maintenance of the necessary standard of Health Service may become disproportionately costly. The National Planning Committee lays dawn this standard as 1 bed for every 1,000 persons for hospital treatment; and the Bhore Committee practically endorses that standard.

The fact has also been recognised by this systematic Health Survey and Development Committee that the most satisfactory method of providing this Service on an adequate scale is to maintain a whole-time salaried staff, duly qualified for each branch. Only then can Government provide the necessary doctors, nurses, and other assistants, as well as drugs, medicines, instruments and apparatus incidental to the effective working of this service in the whole country. That Committee is convinced that once the medical profession has been made into a whole-time, salaried, public service, in all its variety, no room would be left for private practice. Under existing conditions, private practice very often becomes incompatible with the duties that an eminent medical practitioner, nurse, or assistant is required to put in as honorary consultant in public or charitable institutions. Their whole-time energy and attention should be made available to the community which insures them against any want or lack of work.

A public medical servant would be, moreover, better inclined to pay greater attention to the preventive side of this work rather than to the curative which today brings more money to a medical practitioner. The interests of the community's health lie much more on the side of prevention of disease, than in curing illness when it occurs. We should, therefore, endorse that opinion for all departments of the medical, nursing and allied services, and convert them into a truly nationalised public service, maintained at public cost, and for the common benefit.

Common Diseases In India

This is the more important because there are a number of common pests for the people of India, which can and will be effectively tackled only when a permanent, whole-time, disinterested health service is engaged in combating and eliminating these evils. We have but to mention such common ailments as malaria, plague, leprosy, blindness, tuberculosis, infant and maternity mortality, venereal diseases, cholera, cancer, hookworm, etc. to show how heavy a toll is levied by them, not only in the shape of actual deaths caused, but also by causing general debility left in their wake even when the first attack is overcome. The result is that the working efficiency of the population is appreciably and permanently diminished. As stated in this Introduction, the normal expectation of life at birth in India is perhaps less than half or 2|5ths of that commonly available in more advanced industrialised countries. With such a short span of life, and with working efficiency impaired by the ravages of these avoidable diseases, it is not at all surprising that the **per capita** wealth in this country is so disproportionately small, compared to the corresponding ability of countries like the United Kingdom or the United States. At the very highest, our **per capita** income is, even under present inflated prices, hardly more than Rs. 6 or Rs. 7 per head per month. This compares with Rs. 90 to Rs. 100 per head per month in the United Kingdom, and Rs. 110 to Rs. 120 per menth in the United States, or perhaps much higher. With the limited facilities afforded to the Indian peasant and industrial worker, it is obvious that he cannot provide himself from his own income with all the amenities, advantages or equipment to fight such common pests.

Leprosy.—A brief idea may be had from the following summary about the incidence and variety of such diseases affecting people's health in this country. There are, for instance, over one hundred and fifty thousand lepers in this country, according to the Census of 1931 declared as such. But this figure is, according to expert investigations, far, far below the actual prevalence of this ancient curse. Sufferers of this kind are believed to number not less than a million. About three-quarters of this number may be mildly afflicted; but even so, the disease is communicable and likely to affect those who come into contact with them in the daily course of their business. It is common in all parts of India; and there seems yet no signs of its being brought under control, notwithstanding the efforts of the special Missions to Lepers and the Organisation of the British Empire Relief Association (Indian Council).

Malaria is the most wide-spread single cause of death or debility in this country; and so constitutes the biggest problem in any measures dealing with Public Health. As many as two-thirds of the villages in Bengal are reported to be its victims; and over 60% of the total population suffer every year. Competent observers have reported that 1,000 people die everyday in Bengal from this single disease; and that, over India as a whole, not less than a million die from the same cause. Its incidence is at least three times as high in the rural areas as in urban; affects the general vitality or the resistence capacity of the people so persistently that their health is forever undermined.

This is the more regrettable as it is now a preventable disease, if only its germ-carrying mosquito is destroyed. Several insecticides have been invented and are in use, particularly because of the stationing of large numbers of American Forces in India during the last War, the maintenance of whose health drove the American Government to apply the most stringent measures to ensure their forces against this curse. Pyrethrum and DDT are new insecticides with a high degree of efficiency in ridding the country of the pest. The virulence of the disease can likewise be brought under control very substantially by the newly developed Anti-Malaria Drugs. Quinine has been a specific ever since contact with the West brought the ravages of malaria, upon people unused to it, to their notice. Mepacrine and paludrine are more recently discovered antidotes. Chirata is an indigenous drug which was known throughout India as a preventive. Even arsenic has been used to control it with considerable success. Notwithstanding, however, all these precautionary, preventive, or curative measures, it is amazing how much the diseases still persist in this country.

Plague.—Bubonic Plague has had a history of something like 50 years. It broke out in this country in 1896. Its greatest virulence lasted for ten years or so, claiming millions of lives, since when it has become a diminishing cause of death. Anti-plague serum or innoculation has been developed to fight against this ancient enemy of mankind.

Blindness is another very common phenomenon. The last census records not less than two million people suffering from defective eye-sight. At least a million are believed to be totally blind who need special attention, not only for their education but also employment, so that their life may not be a curse to themselves and a nuisance to others. The chief causes of blindness are inflammatory diseases of the eyes through small-pox, venereal diseases amongst the parents, nutritional deficiency or cataract. Most of these are possible to prevent, particularly blindness **neo natorum**, resulting from infected parents. Adequate social legislation and curative facilities will help, if not effectively to root out this danger to our working efficiency, at least to minimise its incidence. Special schools for the blind, with all the latest devices for their education, as well as employment, have been noted in another volume of this Series, so that we need not go more into details here.

Tuberculosis is yet another menace to the public health of India, not only by way of actual deaths (about 500,000 every year) and debility it claims every year, but also in its serious possibility of transmission by contact or otherwise. There are some 2½ million cases of this disease. Large numbers die from it every year; and the incidence of the disease is so great that special attention has been claimed from the highest Government Authorities from the Governor-General downward, to the Anti-Tuberculosis drive. It is unnecessary to go into the details, some of which are mentioned in the Summary of Developments. A point of special importance here is in regard to the possibility of controlling, if not avoiding altogether, this disease, if only an adequate medical service for proper advice and nursing facilities could be developed.

Venereal Diseases.—The extent of venereal disease is even less known in this country than that of other afflictions just listed. Nevertheless their incidence is known to be very high. A survey conducted by a former Director-General of Medical Services in India revealed 37 out of every 1,000 persons suffering from syphillis or gonorrhea. Because of social reasons, there is a degree of secrecy and silence shrouding this matter, as in every country accepting the common code of morality and social decency makes this disease a matter of shame to the individual affected which makes this a difficult problem to tackle. Whether or not the available statistics at all indicate the extent of the evil, it is undisputed that the diseases have spread in a very large degree. Their ravages are not confined to those who actually suffer for their own sins, but affect their innocent offsprings, spouses, and friends. Like other diseases, modern science has made it possible to prevent this as well, if only sufficient knowledge is spread on this matter among the people, and adequate facilities provided to deal with them when they occur. The lack of adequate data or reliable statistics in these subjects is the greatest handicap which has been noticed by all who have considered the problem of public health in the country.

Small-pox with **Cholera** and **Plague** is the most considerable and frequent epidemic affecting India. The rate of mortality, debility, or other deleterious consequences due to these is difficult to ascertain, though there is some ground to believe it has in recent years been declining. An active and universal campaign for vaccination may make this decline much sharper till the pest gradually becomes wholly eliminated. And the same may be said of cholera, plague and diseases affecting women in child bed, or newly-born infants. High as the rate of mortality is in each case, it can be effectively controlled and substantially reduced, if only we have a properly organised Public Health Service.

Public Health Under A National Plan

Since the National Planning Committee began functioning, this problem has been thoroughly investigated by a **Committee on Health Survey and Development,** presided over by Sir Joseph Bhore. Its principal recommendations will be outlined in the Summary of Developments appearing at the end of this volume. Here it is necessary to add, at the risk of repetition, that for the effective promotion of working efficiency of our people, the wastage resulting from preventable disease and debility must be reduced. And that can only be achieved if we have, as an integral and essential part of the National Plan, a well-organised Medical and Public Health Service for the country as a whole, providing a full complement of physicians and surgeons, nurses and specialists as well as of the necessary drugs and medicines, apparatus and appliances.

Dietary & Health

As regards the other Terms of Reference to the Sub-Committee, and particularly with regard to Dietary, the remarks already made in the beginning of this Introduction, regarding the poverty of the people, and their consequent inability to obtain well-balanced food, must necessarily apply with great force. It has been accepted by the National Planning Committee as amongst the objectives of a sound National Plan that the standard of living of the people be substantially improved within a measurable time. Improvement in food—including its calorific as well as vitamin value, —and adequate and balanced diet, must take the highest priority in considering any objective which concerns the standard of living.

The Bhore Committee on Health Survey and Development has made detailed recommendations in regard to the diet of the people as a whole. Experiments conducted in the Nutrition Research Institutions in the country indicate that the customary food of the people, though lacking in all that an optimum dietary should contain, is not deficient in body-building or health maintaining value, if only they could get a sufficient quantity of such food. The fact of mal-nutrition and general debility resulting therefrom would not then be so much in evidence. It is unnecessary to go more into detail in this place in laying down objectively the standard dietary with its component parts in all its aspects. For our purpose, it is enough if, as recommended by the National Planning Committee in its Instructions for the Guidance of its Sub-Committees, an average dietary of 2400 to 2800 calories per day per head were aimed at and achieved as amongst the first objectives of a successful National Plan

Popular Education In Matters Of Health

Note has already been taken of certain prevailing social customs and institutions, like early marriage or frequent pregnancies, which affect the physique of the people, particularly women. A spread of general knowledge regarding the conditions of maintaining good health will, no doubt, go a long way to off-set this handicap. In so far, however, as it is a matter of fundamental social institutions, with age-old customs and deep-rooted prejudices, education would have to go much deeper and affect the basic conditions of living and working much more thoroughly, if it is intended by its means to reform and recondition the social system and the people's ways of living.

Disregard to some primary requirements of good health, supposed to be shown in the matter of skilled professional assistance at child-birth, and other such common contingencies of life is due, in a considerable measure, no doubt, to the people's inability to afford such service of highly skilled personnel. It is beyond their means, and so outside their ordinary expectation. The number of trained personnel, with modern technique and equipment in such matters, and the concentration of what is available in the larger towns, is no less responsible for the situation. If the attendance of trained doctors and midwives is brought within the ability of the people, or is provided free of cost on as extensive a scale as possible, the complaint would disappear. It must, therefore, be regarded as an integral part of a National Plan, in the public health sector, to see that the entire mass of the country's population is provided with skilled medical attendance, advice and treatment wherever and whenever required, as a matter of the people's right and the State's obligation.

Education Of The Health Personnel

From the standpoint of reorganising the medical education of the health personnel in the country, Indian Universities have almost all been devoted to medical science and research as taught in the West in all its branches. Of late, however, indigenous science or practice of medicine have been receiving increasing attention from official quarters. If medical advice and treatment to the mass of the people is to be provided on the necessary scale free of charge, the National Plan will have to bring the indigenous **Vaidya, Hakim,** or **Dai** into line with the more elaborately or pretentiously trained physician or surgeon, gynaecologist or obstetrician. It is more a matter of the technique particularly in the case of the last named, and certain precautions by way of cleanliness, than a matter of the actual drugs or appliances used.

This is not to say that modern technique or latest appliances, apparatus, or instruments, required for avoiding disease or pain in its cure, are to be neglected. These, however, must be made or found in the country in an ever increasing degree. An important sector of the Plan will, no doubt, have to be the provision, from the country's own resources, of all the drugs, medicines, appliances and instruments in safeguarding the health of the nation. Legitimate considerations of economy may necessitate our utilisation of the best of all available indigenous resources, in men as well as medicines, if only to attain as high a degree of National Self-sufficiency, held out by the National Planning Committee as the ultimate objective, as possible.

In this, as in other branches of the Public Health Service, the Bhore Committee has made detailed recommendations, which it would be superfluous to reproduce here. Indian Universities and allied bodies like the Tropical School of Medicine, Nutrition Research, and other Institutions devoted to this subject, are busy elaborating schemes for reorganising the entire Medical and Nursing Education in the country. The National Plan would have to take stock of it only in proportion as the general system of education, considered in another volume in this Series, forms an integral part of the National Plan. The Bhore Committee has, in this field also, made detailed recommendations which, it is to be hoped, will receive early and sympathetic consideration.

Drugs, Medicines, Apparatus, Instruments

Another important Term of Reference relates to the provision of Drugs, Medicines, etc., needed for maintaining public health, as well as the apparatus and instruments required for equipping the Service and Institutions, in the most up-to-date degree. As regards the former, consideration has been given to the matter in another volume in this Series, viz. that on Chemical Industries. Needless to add that the production of drugs and medicines and intensive research in their development within the country, is a most important item in national self-sufficiency, which cannot be ignored or left out of the National Plan. The same applies to the provision of all the necessary equipment, in the shape of apparatus and instruments needed in the various departments of medical treatment and health development. This part has also been considered in another volume in the Series, namely that dealing with Scientific Instruments; and so it need not be repeated here.

K. T. SHAH.

Note. It was at first intended to combine in one volume the reports of two Sub-Committees, viz. that on National Housing on on Health. Though the main Reports of the Health Committee makes a meagre document, the notes by the several members considerably swell the size. Given the varied Terms of Reference to that Sub-Committee, Introduction of the size given was unavoidable; while the Summary of Developments had to take adequate note of the most comprehensive Survey and exhaustive recommendations on the various problems of our national health, which are eminently suited to be made the basis for a National Health Policy as part of the programme of planned development. Owing to these, the material on the subject has grown so much that a separate volume devoted to it entirely became necessary.

K. T. S.

REPORT OF THE NATIONAL HEALTH SUB-COMMITTEE

INTRODUCTION

India is a country whose "people are poor beyond compare, short lived and incapable of resisting disease and epidemics, illiteracy rampant, vast areas devoid of all sanitary or medical provision, unemployment on a prodigious scale, both among the middle class and the masses."

—**Jawaharlal Nehru**
(Autobiography)

The above quotation tersely describes the present health conditions of the country and their causes. The poverty of the people is proverbial. The National Planning Committee assesses the average income to be no higher than Rs. 5 per head per month. This miserably small sum cannot possibly provide for all the essential necessities of life of which provision for health is one. The foremost requirement for the maintenance of health is food, adequate both in quantity and quality. Estimates made by various authorities, regarding the cost of providing the minimum quantities of suitable food, worked out, at prevailing prices of food stuffs, to more than Rs. 5 per head per month (Government of India Health Bulletin No. 23 gives the cost at Rs. 5 to 6 per adult per month).* Thus even if the whole of this income of Rs. 5 was used solely for the provision of food it would not suffice to provide adequate nutrition. But, of course, there are other demands which must be met. The result is that undernourishment and malnutrition are profound and widespread. They produce an extremely high incidence of disease, which, in its turn, demands proportionately higher provision for medical relief than in other countries.

Actually the country lacks even the most rudimentary sanitary arrangements for the prevention of disease in its rural area, i.e., the major part of the country. Even for such an imperative necessity for health maintenance, as the supply of pure drinking water, no planned arrangements exist in the villages. The state of affairs regarding medical relief is no better. In the country as a whole, one more or less ill-equipped hospital or dispensary serves the need of 40,000 of the population. If we distinguish, further, between the urban and rural areas, the inadequacy becomes still more profound. In the rural areas one ill-equipped unit has to serve the needs of about 124,000 of the population.

---

* These figures are with reference to the price-level prevailing before the war. To-day it would, very likely, be at least twice as high.—Editor.

The problem of planning a suitable health organisation for this country is, thus, a stupendous task. Adequate health arrangements require large sums of money, but the poverty of the people does not permit of these being found. And because such funds are not found, and suitable health arrangements are not made, the vitality and, therefore, the earning capacity of the people are lowered still further. It is indeed a terribly vicious circle. Since the primary purpose of the Planning Committee is to husband and improve the resources of the people, it is a matter of vital importance that a start should be made straightaway to improve the health of the people, which is an essential pre-requisite for increasing the earning capacity of the people. Without safeguarding the health of the people no industrial planning can succeed. Both efforts at an economic improvement of the people and measures for the betterment of their health must go hand in hand. The starting of a suitable organisation brooks of no delay.

I. FOOD AND NUTRITION.

It is now well recognised that something like 75 per cent or even more, of the incidence of physical disabilities other than those due to infectious diseases can be prevented by the provision of suitable food, adequate both in quantity and quality. But the country does not, at present, produce enough food, nor can it import from without to satisfy all its requrements. The deficiency is both quantitative and qualitative. Animal proteins, like milk, other dairy products and meat, which are so essential for the well being of the body, are actually becoming scarcer, and beyond the reach of the great mass of people. Obviously, therefore, the first and the most fundamental step in the health organisation of the country must be the provision of an adequate food supply. Thus the health problems get immediately linked up with the economic problems of the country. We have no doubt that the Sub-Committee of the National Planning Committee, charged with agricultural and industrial development of this country, must have already dealt with this aspect of the problem. Rapid industrialisation of the country to increase the total wealth, and to provide means for improving agricultural yield of the land, offer the only solution.

We do not propose, in this report, to say anything regarding the quantity of food we consider adequate for the people, but shall limit ourselves to saying that the needs of the people in this respect in this country are not different from the corresponding needs of the people in other temperate countries. Indians require as much food of different types as is required in other parts of the world, to permit of growth and to maintain health. This Sub-Committee cannot do better than suggest to the Planning Committee that they should adopt the standard fixed by the Technical Commission of the Health Committee of the League of Nations, both as regards caloric needs and the provision of proteins, fats and other dietary requirements.

Regarding caloric requirements, the following recommendations are made:*

> "(a) An adult, male or female, living an ordinary every-day life in a temperate climate, and not engaged in manual work is taken as the basis on which the needs of other age-groups are reckoned. An allowance of 2,400 calories net per day is considered adequate to meet the requirements of such an individual.
>
> (b) The following supplements for muscular activity should be added to the basic requirements in (a):
>
> Light work: up to 75 calories per hour of work.
> Moderate work: up to 75-150 calories per hour of work.
> Hard work: up to 150-300 calories per hour of work.
> Very hard work: up to 300 calories and upwards per hour of work".

Protein Requirements: The protein intake for all adults should not fall below 1 gramme of protein per kilogramme of body-weight. The protein should be derived from a variety of sources, and it is desirable that a part of the protein should be of animal origin. (B.M.A.

---

* Ref: League of Nations - Problem of Nutrition, Vol. II, page 13, 1936.

Committee suggest that the proteins from animal source should be half of the total protein foods).

"**Fat Requirement:** Fat must be a constituent of the normal diet, but the data at present available do not suffice to permit a precise statement of the quantity required. The high content of vitamins A and|or D in certain fats justified their use in liberal amounts."

The Committee of Nutrition (B.M.A.) recommend 100 grammes of fat daily and add that as much of this fat as possible should be derived from certain animal sources.

The diet must also contain a certain amount of "protective" foods (food rich in minerals and vitamins). The most important of these are milk, and milk products, eggs and glandular tissues, green leafy vegetables and fruits.

It is to be understood that the standards we have suggested above are the optimum standards, which the Planning Authority should aim at achieving as soon as practicable. However, since the B.M.R. for Indians is 8% lower than that of Europeans, the caloric requirements in India may be fixed at 8 % lower than the League Standard.

II. HEALTH ORGANISATION

A. Some General Considerations

Before attempting to describe the type of organisation which we should aim at under the prevailing conditions in the country, we should like to draw the attention of the Committee to the wasteful dichotomy which has grown up due to historical reasons in the medical organisations of different countries, i.e. the division of medical organization into two independent departments of curative and preventive medicine. Until modern times the causation of disease was vaguely understood or not at all, with the result that little or nothing could be done to prevent disease. Under these conditions, efforts were perforce limited to curing people after they got ill; thus hospitals and private practitioners grew to attend to this need. With the rise of scientific medicine, and specially with our increasing knowledge of bacteria, vitamins and hormones, etc., causation of a large number of diseases has been understood; and it has become clear that by the application of suitable measures these diseases can, to a large extent, be prevented. The situation thus created demanded that the medical organisations do put to use this knowledge. But because of the strongly entrenched old habits of thought, old institutions, and the vested interests of a large body of private practitioners, preventive medicine came to be organised as a separate entity. This arrangement has proved both inefficient and wasteful. Since we have no health organisation from the very bottom, we should organise our health work on a unitary basis. Both curative and preventive work should be suitably integrated, and should be handled by one organisation.

There is another aspect which might be dealt with here. People are poor, in fact too poor, to pay for any medical aid that they need. Also because an integrated unitary system of preventive and curative medicine can be properly organised only under the State, it is a matter of extreme importance that medicine be organised as a State activity and that medical aid of all types be provided to the people free of charge. From this it also follows that medical education will have to be provided free or at the most at a nominal cost to all qualified persons selected for the purpose. Only by organising medicine as a State activity can we ensure proper co-ordination of different health agencies, and thereby prevent overlapping and waste.

A third general aspect of medicine may also be considered before proceeding further. It is erroneously believed that medical research is an expensive pursuit and a luxury; that so much knowledge is already available that even if we devoted the whole of our limited resources to making use of the existing knowledge, we could not catch up with it. Such ideas arise from an utter misconception of the nature of and proper methods for the pursuit of a scientific discipline like medicine. Actually research is not a special activity engaged in just finding new knowledge. It is largely an attitude of mind towards any work in hand. When any scientific work is pursued with a critical attitude, new knowledge results; or at least the need for further investigation becomes clear. A critical attitude of mind towards the work in hand is the very essence of scientific work. It is well understood now that, if any scientific work is carried out in a purely routine manner, its practice steadily deteriorates. Though we are poor and can hardly raise enough resources to make an adequate provision for the most elementary medical needs of the people, still we must make provision for medical research all along the line and encourage it.

B. Some Special Features Of The Problem

During the recent decades much thought and study have been devoted to the problem of organizing adequate health services for modern communities. This work has made the general principles of such organisations quite clear, and a number of ready made schemes are available. But none of them exactly meets our needs, nor is within our means. We must take note of the features peculiar to India, and, making use of the general principles, devise an organisation which will meet our special needs, and more important still, will be within our means. Some of the chief features of the problem are:—

(I) As we have indicated above the country has at present no health organisation worth the name. Urban areas are a little better off than the rural areas; but even there the organisation is far from adequate or efficient. Thus the situation demands a huge effort to meet even the most elementary needs of the country.

(2) Our resources are exceedingly meagre. This factor imposes the necessity of building up our organisation in the cheapest manner possible; yet the organisation must be all-embracing, and must at least make a beginning in taking care of the health needs of the country.

(3) The appalling ignorance of the masses, and their religious and social prejudices, make the introduction of scientific medicine into the country peculiarly difficult. This circumstance makes it imperative that any organisation built up to be effective must call for the maximum co-operation of the people themselves, and this objective will be very much facilitated if local talent is fully utilized to carry out the plan.

(4) There is an extreme dearth of qualified medical men; and we lack sufficient medical schools to produce them in sufficient numbers. To cover all the various medical needs of our country, at least two medical men or women per 1,000 of population are needed. This would demand 800,000 medical men, for the 400,000,000 population, and we do not have even a small fraction of this number. Any organisation, therefore, built up will have to depend, to begin with, on only partially trained men for simpler work; and such men will have to be specially trained in specially organised teaching centres.

(5) The confusion prevailing on the question of so-called indigenous systems of medicine is not only already producing considerable dissipation of effort and

funds, but is also beginning to side-track the medical development of the country. Any scheme of medical organisation must adequately solve this problem, and set India on the road of scientific development in the domain of medicine.

(6) There is an utter lack of a pharmaceutical industry to meet the needs of the country regarding drugs.

(7) India lacks industrial development to produce medical and surgical instruments and hospital equipment in anything like the quantities needed. Most of the articles urgently needed we do not produce at all.

C. General Lines of Approach to the Problem

The complex problem created by the dearth of qualified medical men and women, the insufficiency of medical schools, and the lack of resources on the one hand, and the imperative necessity of organising in the shortest possible time, a stupendously large number of health agencies requiring a very large number of medical personnel to meet even the most elementary medical needs of the country, can be met only by training specially a very large body of men to perform some of the simpler tasks in our health organisation. We will call these specially trained men, Health Workers. Thus the cornerstone of the scheme we recommend is a Health Worker.

(a) Health Workers

Intelligent young men and young women would be selected from the villages themselves at the rate of one per 900 of population. Those selected should preferably be literate, be able at least to read and write their mother tongue. They will be sent to special training centres described below, and will be given a course of training for nine months. This training will be entirely practical, and will be employed to acquaint these young men thoroughly with the fundamentals of community and personal hygiene, first aid, recognition of some of the common ailments, and the use of some simple remedies. The training of these young men and women will have to be handled by men with a sound knowledge themselves, and imbued with a missionary spirit. For the future well being of the country, one of the objects of this special training will be to convey to the men under training this missionary spirit, and the social implications of medicine as a science. We feel that if we are going to succeed in our endeavour we shall have to create and depend on this missionary spirit of the various workers. The huge task that faces us could never be solved on a bureaucratic or routine basis. After the completion of this training, these Health Workers will return to their own villages. There by example and persuasion they will spread the gospel of healthy living, communal and personal, and thus take other villagers a step or two away from their age-long prejudices and superstition on the road to better living. Besides this they will administer simple first aid in injury and sickness. We feel the most urgent and important task which faces us is to educate our rural population in healthy living, and make it possible for them to do so. The health worker will be one of the villagers themselves, only somewhat better trained than themselves. He will not appear to the villagers as a strange imposition of a strange system, but their kith and kin who desires to help them. In our opinion such Health Workers will thus be ideally situated to influence their village neighbours and take them forward.

Each training centre, as we shall describe below, will train 60 such men in a year. We envisage such training centres will be progressively increased to train in a five year period enough of these Health Workers so as to provide one health worker for each 1,000 of population and 20 per cent more. Thus at the end of five years, these health workers will be 20 per cent in excess of the men actually required. At this stage 20 per cent of the men or women will be specially selected for a further training for another year at special centres. This further training will be continued for the next five years until all the Health Workers have had a second course of training. Thereafter specially selected Health Workers will be given still further training for suitable periods of time, until at least one third of them have had full course of medical training and they have become fully qualified medical men.

This stage, in our opinion, should be reached in about 20 years from the start of this scheme. At the same time an increase in the number of regular medical schools, as we suggest below, will be producing increased number of fully trained medical men, so that, at the end of 20 years fully qualified men and women would be available in sufficient numbers to replace all the partially trained men, and thereafter, the replacements of casualties will be normally filled by trained graduates.

(b) Vaids and Hakims

Before proceeding further we should like to take up here the question of Vaids and Hakims, and the indigenous systems of medicine. It is a matter of extreme importance that this question should be properly solved, otherwise it is likely to impede terribly the development of scientific medicine in the country. To us the best way out of the difficulty seems to be that in the selection of young men for training as Health Workers, all young Vaids and Hakims, who are otherwise suitable as intelligent young men, should be taken up, given training with the other men as Health Workers, and employed as such. Somewhat older men, but none above 35 years of age, should be similarly selected, and given an intensified training for two years at the special Divisional Training Centres described below. Of the men thus trained, those who show special aptitude should be made eligible to receive training at the regular medical schools of the University type. Thus most of the practitioners of indigenous systems will be immediately absorbed, trained and usefully employed. Thereafter there should be only one type of training for all, and that the best scientific training in medicine in schools of a university standard. We believe that when medical education is made free or almost free, for those fitted to receive such training, the present insistence of cheap training as L.C.P.S.'s or Vaids or Hakims will automatically disappear. We have gone into this question very carefully, and are convinced that this division into various types of training is entirely due to economic factors. Once the economic basis of medical work is put on sound lines, the confusion which arises from the multiplicity of different types of qualifications and systems of medicine will disappear.

(c) Training Centres

To begin with training centres will be of three types to take care of the special needs of the scheme, but the two lower types will disappear in course of time, leaving only regular medical schools of the University type.

1. **Training centres for preliminary training of health workers:** We are suggesting below that each District or regional unit, on a population basis of 50,000 should have a 50 bed hospital and a Health Centre. These District Hospitals should be suitably organised and used as training centres for Health Workers. Each such centre should be capable of training 12 Health Workers each year.

2. **Advanced Training Centres for Health Workers and specially selected Vaids and Hakims:**—Each division

on a population basis of 5,00,000 will have a Divisional Hospital and Health Centre with 200 beds; these Divisional Hospitals and Health Centres should be suitably organised for the advanced training of specially selected Health Workers, after they have completed the preliminary training at the lower type of school. These Divisional Hospitals will also specialise in training women workers in child welfare and maternity work, and general and communal hygiene.

3. Medical Schools of the University Standard: At suitable centres for each 50,00,000 population there should be one Metropolitan Hospital and a Health Centre with 450 beds. Each such hospital sould have a fully, equipped medical school to impart scientific medical education of the highest type. All three types of hospitals will also undertake the training of nurses and other personnel required. Each school will require to graduate about 200 men each year.

Here very briefly we should like to indicate that such Unversity type of medical schools, and in fact schools of the other two types also, should be staffed with whole time medical workers. By whole time workers we mean men who are salaried, and devote the whole of their time to the work in the hospital or elsewhere as the organisation demands. They will, thus, not be free to engage in private practice. In fact under our scheme of medical organisation, private practice would gradually disappear. This arrangement will have the further advantage that it will facilitate medical research being carried on at all these centres.

The second point in the training of medicine we want particularly to stress is that all students should be given very serious training in the social and economic implication of the science of medicine. A Chair should immediately be created at each medical school to take care of this very important subject.

A third consideration must be dealt with here. The whole scheme depends on the type of teachers one can get. They must not only be adequately scientifically trained, but they must be fully alive to their social function. It is possible that for the early batches of teachers we may have to start special training centres for giving our teachers correct orientation of their work. Then when this scheme has begun to function properly, all new graduates will have received adequate training in the social implications of medicine at the regular medical schools as suggested in previous paragraphs.

Outline Of The Organisation

A very bare skeleton of the actual organisation given below does not make any attempt to be definitive. It is drawn up merely to indicate the general trend of our suggestions. For instance, the number of beds we indicate for each of the different types of hospitals is more than provisional. A great deal of further studies would be necessary to decide the number of beds to be actually provided for. Further, the number of beds so decided upon will have to be allotted for various types of cases, e.g. general medical and surgical, specialities, obstetrics, sanatoria, and so on. It is also to be noted that we are indicating below the number of institutions as they will be at the end of five years from the start of the scheme. The tempo of development to reach this stage in five years can only be decided later.

Under the scheme each village or a group of villages, on a population basis of 1,000 will have one Health Worker. Ten of these villages as a group will have a Village Dispensary with 3 beds and an attached village Health Centre. The dispensary will have a fairly well trained medical man, and for this purpose we may well employ all the L.C.P.S. at present available, as the number of dispensaries gradually increases, and the number of L.C.P.S.'s available is not enough to man them,—Health Workers who have received one or two courses of advanced training could well be employed for this purpose. The (attached) health centre will have a Senior Health Worker, who would be a L.C.P.S. or a Health Worker, who has received advanced training, and two maternity workers and a health visitor, who have been specially trained at a Divisional Hospital in child welfare work and maternity work. The senior health worker would be in charge of the whole group of these workers including the man in charge of the dispensary; five of these Village Dispensaries and health centres will be grouped round a District Hospital and a health centre with 50 beds. Thus there will be one such District Centre for each 50,000 of the population. The Centre will have adequate University-trained medical and nursing staff, and workers for hospital and health work. All the workers in this group will be under the charge of a Health Officer, with a University-training in medicine, with special training in personal and communal hygiene and social function of medicine. The District Health Centres will be organised as special training centres for Health Workers.

Ten of these District Centres will be based on a Divisional Hospital and Health Centre and 200 beds, thus one of these institutions will serve 5,00,000 of population. This institute will be under the charge of a Chief Medical Officer and the whole division set up will be under the charge of a Director of Health. Each Divisional Centre will be organised for the advanced training of already trained health workers and women workers for child welfare and maternity work.

The next unit will be a Metropolitan hospital and Health Centre with 450 beds, controlling ten divisional centres, and thus serving the needs of a population of 50,00,000. Such institutions will be situated in big cities, and will have their own dispensaries, with adequate staff for paying domestic visits in cases of serious illness. The medical workers employed at the dispensaries will also be attached to the central hospital. Further, these institutions will have fully equipped and organised medical schools of the University type. These centres, as well as all the other centres, will also train women workers as nurses. Such centres will not be isolated institutions, like the present city hospitals; but will be intimately linked with ten divisional set ups. The Metropolitan Centre itself will be under the charge of a Chief Medical Officer, while the whole set of the Metropolitan Centre and ten divisional centres will be controlled by a Director of Health. The whole medical organisation of a Province will be controlled by a Director-General of Health.

This description is very sketchy, indeed; and leaves out of account a number of other institutions that will be necessary. But the main purpose of giving this sketch of the organisation is to indicate that these centres, from the lowest to the highest, will be intimately linked up with each other and that medicine will be handled as an integrated whole.

It is difficult to get any worthwhile data as to the sums being expended at present in India as a whole on the various health organisations. But for our purpose it is sufficient to take the Province of Bombay, for which we can get more readily the necessary figures.

Bombay Province in 1937 expended from Government, Municipal and other sources a total sum of Rs. 124,39,229|- for a population of 21,879,123 making an expenditure of approximately 9 annas per head. The present expenditure provides one bed per 3,400 of population and some indifferent sanitation. These hospital facilities and sanitary organisations are centred in big cities. In rural areas there is little or nothing in the shape of sanitary or medical arrangements. We are aware that this expenditure varies enormously from Province to Province. Taking figures for medical relief only, the expenditure per head of population varied from 1 anna in U.P. to 5 annas and 7 pies in the Punjab, while the Bombay figure is 4 annas 9 pies (as given in Indian Medical Review by the Director-General, Indian Medical Service, 1938). The scheme we are suggesting calls for a steadily increased expenditure, which in five years will amount to Rs. 5-3|4 per head of population. For the whole of British India, health organisation will require about 80 crores of rupees per year.

Again, taking Bombay Province as an example:—

Each Health Centre (one for population 50,000) will for the first year cost as follows:

	Per month	Per annum
1 Health Officer	Rs. 200	—
5 Senior Health Workers 75 x 5	,, 375	—
60 Health Workers 60 x 30	,, 1,800	—
1 Medical Officer 1|c District Hospital	,, 200	—
5 Physicians, Village Dispensaries 75 x 5	,, 375	—
5 Health Visitors 75 x 5	,, 375	—
10 Women Workers 50 x 10	,, 500	—
2 Clerks 50 x 2	,, 100	—
6 Other Workers 6 x 15	,, 90	—
100 Labourers (Street clearing conservancy)	,, 1,000	—
	Rs. 5,015 x 12	Rs. 60,180
4 Village Dispensaries 300 x 4	,, 1,200 x 12	,, 14,400
1 District Hospital (50 beds)		,, 28,400
Contingencies, Sanitation, Maternity etc.		,, 3,420
Sanitary, Engineering, Building etc.		,, 20,000
Total		Rs. 126,400
Cost of working the 430 centres for one year; 1,26,400 x 430		Rs. 5,43,52,000
86 Chief Medical Officers at Rs. 400 (86 x 400 x 12)		,, 4,12,800
43 Divisional Hospitals (200 beds each) of Belgaum 125 beds)		,, 36,38,875
5 Metropolitan Hospitals (450 beds each of Sassoon Hospital, Poona, Rs. 2,76,645) (300 beds) 4,14,967 x 5		,, 20,74,835
For new buildings, additions and repairs to old buildings		,, 15,00,000
5 Medical Colleges at Rs. 5,00,000		,, 25,00,000
Total		Rs. 6,44,78,510

III. Manufacture of Drugs.

We are fortunate that the Medical Preparations Sub-Committee of the Indian Chemical Manufacturers' Association under the able Chairmanship of Col. R. N. Chopra, has already exhaustively studied this question. We attach a copy of their invaluable report as an appendix* to this report. The discussion of the arrangement for the manufacture of the drugs dealt with in the appendix will naturally fall in the province of different Sub-Committees and we trust they will deal with the problem.

Here we would like to deal with one issue of serious consequence to the country, i.e., the place which the pharmacopoeia of various indigenous systems of medicine should have in our scheme. Here again we are afraid economical factors are paramount. The cost of drugs is what is keeping this question alive. It is well to remember that, until recent times, the pharmacopoeia of all countries were uncritical compilations of all sorts of drugs,—and India is no exception, except that the "unofficial" pharmacopoeia of India and its systems of medicine have not been adequately revised for centuries. With the development of the scientific methods of assessing pharmacological and therapeutic value of drugs, all the pharmacopoeias have been steadily discarding larger and larger number of these drugs at each revision, as the tests have shown them to be of no value. At the same time great advances have been made in the preparation of new drugs with specific action in given diseases. The drugs so produced are some of the greatest achievements of scientific medicine. There is little doubt that this trend of medicine will yield still greater discoveries, and ultimately most of the old drugs will be replaced by preparations with specific action. To our mind, then, the soultion of the problem of the expensiveness of the drugs is not to use inert and useless drugs, though cheap; but to produce effective needed drugs cheaply in the country. To tackle this problem properly it would be necessary to draw up a modern Indian Pharmacopoeia on the basis of all the scientific knowledge available. A properly constituted committee will take years to accomplish this task and one such committee should be constituted straightaway. A large number of Indian drugs have so far not been scientifically studied and it is; therefore, necessary that the Planning Authority should provide for active research in the same. In the meantime a standard pharmacopoeia, such as the British Pharmacopoeia, with an Indian addendum, should be utilised. On the basis of such a pharmacopoeia different drugs should be divided up into several lists.

---

*Appendix X.

1. A list of 10 to 12 simple remedies which can be entrusted to health workers for use in the villages. The preparation of these drugs in large quantities should be begun straightaway.

2. Drugs for the preparation of which raw material is already available or can easily be produced in India. Production of these should also be immediately undertaken.

3. Drugs for the preparation of which raw material is not available and which, therefore, cannot easily be produced in this country. Such drugs are likely to require a very highly developed chemical industry. We have no doubt that the Sub-Committee entrusted with that subject will have fully dealt with the problem. We content ourselves by stating that the development of chemical industry is of the utmost importance to medicine. While we are organising ourselves, we perforce must import such drugs. But if the importation is done by the State in large bulk the costs will be much less than at present.

Proprietary and Secret Remedies.

We are very definitely of the opinion that no secret remedies, remedies whose exact composition is not disclosed on the label in the clearest possible terms, should be allowed to be sold.

Proprietary remedies whose composition is clearly indicated on the labels may be allowed to be sold. But advertising regarding these drugs should be very strictly controlled. No fictitious claims should be allowed to be made, and the users should have remedy in law against any injury done to them through the use of such remedies.

Another important point which we wish to stress is that no individual or firm, Indian or Foreign, should be allowed to hold patent rights for the preparation of any substance useful in human or veterinary medicine. Patent rights were originally intended to work as monetary rewards to inventors. But, with the development of monopoly trusts, the patent rights have assumed very undesirable features. In state controlled medicine, patent rights for the manufacture of drugs and appliances have no place.

IV. MANUFACTURE OF SCIENTIFIC, SURGICAL AND HOSPITAL APPLIANCES

Hardly any manufacture of these articles is being undertaken in the country at present. But we believe a considerable advance can be made in this direction, especially the making of at least some parts of various appliances froor which raw material in the country is available. We have no exact data to offer, and cannot but leave it for the consideration of other committees whose province it is to deal with the question of manufacture. To make definitive lists at this stage of various appliances needed will serve no useful purpose.

V. HEALTH INSURANCE.

The absolute necessity of an adequate system of social and health insurance of workers is now universally recognised. In spite of this fact, there is still a complete lack of any provision for the workers for this purpose in India. There can be no doubt about the urgent need of the institution of a system of National Social Insurance. But this subject properly falls within the purview of the Labour and Finance Sub-Committees. In fact the Memorandum on the subjects of social insurance and health insurance for industrial workers have already been prepared by the Labour Sub-Committee. This Sub-Committee has had an opportunity of considering the memorandum on Health Insurance and approves of the system of insurance suggested, and suggests that its scope should be extended to cover all adults.

Appendix I

PRESCRIBING STANDARDS OF DIETARY AND NUTRITION FOR ALL CLASSES OF POPULATION

By Lt.-Col. S. S. Sokhey

It is universally recognised that undernourishment and malnutrition are profound and widespread in India. Sir John Megaw estimated that only 39 per cent of the population of India is well nourished, the rest being poorly or badly nourished. This is obviously a rough estimate and exaggerates the proportion of well nourished people, for the simple reason that even in a country like England the percentage of well nourished people does not exceed 30 per cent of the population, as Sir John Orr's survey showed.

The Intergovernmental Conference of Far Eastern Countries of Rural Hygiene came to the conclusion that undernourishment and malnutrition were widely spread in the East, and that much impairment of physical development and general health, low vitality and actual disease result from insufficient and improper diet.

Even though no detailed nutritional survey has yet been carried out in India, that very widespread malnutrition exists in India is borne out by the infant mortality rates, the death rate from tuberculosis and the "Expectation of Life" at birth in India. The infant mortality is usually accepted as a sensitive index of the economic and sanitary conditions of a country. The prevention of diseases in infancy depends more upon diet than upon any other single factor. The infant mortality rate for All India (1931-35) is 171 and compares unfavourably with the infant mortality rates for the United Kingdom (65), U.S.A. (59) and Japan (124). Tuberculosis is easily a "poverty disease." It spreads rapidly among ill nourished and badly housed population and correspondingly diminishes when the people are well fed, well housed and cleanly in their habits. "The importance of good nutrition in the prevention of tuberculosis cannot be overstressed." (the Public Health Commission's Report for 1934). At

IV. MANUFACTURE OF SCIENTIFIC, SURGICAL AND HOSPITAL APPLIANCES

Hardly any manufacture of these articles is being undertaken in the country at present. But we believe a considerable advance can be made in this direction, especially the making of at least some parts of various appliances froor which raw material in the country is available. We have no exact data to offer, and cannot but leave it for the consideration of other committees whose province it is to deal with the question of manufacture. To make definitive lists at this stage of various appliances needed will serve no useful purpose.

V. HEALTH INSURANCE.

The absolute necessity of an adequate system of social and health insurance of workers is now universally recognised. In spite of this fact, there is still a complete lack of any provision for the workers for this purpose in India. There can be no doubt about the urgent need of the institution of a system of National Social Insurance. But this subject properly falls within the purview of the Labour and Finance Sub-Committees. In fact the Memorandum on the subjects of social insurance and health insurance for industrial workers have already been prepared by the Labour Sub-Committee. This Sub-Committee has had an opportunity of considering the memorandum on Health Insurance and approves of the system of insurance suggested, and suggests that its scope should be extended to cover all adults.

Appendix I

PRESCRIBING STANDARDS OF DIETARY AND NUTRITION FOR ALL CLASSES OF POPULATION

By Lt.-Col. S. S. Sokhey

It is universally recognised that undernourishment and malnutrition are profound and widespread in India. Sir John Megaw estimated that only 39 per cent of the population of India is well nourished, the rest being poorly or badly nourished. This is obviously a rough estimate and exaggerates the proportion of well nourished people, for the simple reason that even in a country like England the percentage of well nourished people does not exceed 30 per cent of the population, as Sir John Orr's survey showed.

The Intergovernmental Conference of Far Eastern Countries of Rural Hygiene came to the conclusion that undernourishment and malnutrition were widely spread in the East, and that much impairment of physical development and general health, low vitality and actual disease result from insufficient and improper diet.

Even though no detailed nutritional survey has yet been carried out in India, that very widespread malnutrition exists in India is borne out by the infant mortality rates, the death rate from tuberculosis and the "Expectation of Life" at birth in India. The infant mortality is usually accepted as a sensitive index of the economic and sanitary conditions of a country. The prevention of diseases in infancy depends more upon diet than upon any other single factor. The infant mortality rate for All India (1931-35) is 171 and compares unfavourably with the infant mortality rates for the United Kingdom (65), U.S.A. (59) and Japan (124). Tuberculosis is easily a "poverty disease." It spreads rapidly among ill nourished and badly housed population and correspondingly diminishes when the people are well fed, well housed and cleanly in their habits. "The importance of good nutrition in the prevention of tuberculosis cannot be overstressed." (the Public Health Commission's Report for 1934). At a rough estimate, there are 500,000 deaths a year from tuberculosis in India and the death rate in the important towns varies between 1.3 to 3.5 per 1000 of the population, compared with 0.791 in England and Wales (1927). The Expectation of Life in India is given for males as 26.91 and for females 26.56 (1931) while the Expectation of Life for England (1933) was 58.86.

The problem is entirely economic. The relationship between the purchasing power of the people and their nutritional condition has been well brought out by the remarkable studies of Sir John Boyd Orr, "Food, Health and Income" 1936. It shows that even in a country like England where there is no shortage of food, the economic status of groups determines their nutritional condition. The degree of adequacy of food for health increases as income rises. The average diet of the poorest group — 10 per cent of the population is, by the standard adopted, deficient in every constituent* examined. In the second group, 20 per cent, the diet is adequate in protein, fat and carbohydrates, but is deficient in all the vitamins and minerals considered. In the third group, 20 per cent, it is deficient in several of the important vitamins and minerals; in the next group, 20 per cent, complete adequacy is almost reached with the possible exception of calcium and in the still wealthier group, 10 per cent, the diet has a surplus of all constituents considered. A review of the state of health of the people of the different groups suggests that as income increases, disease and death rate decrease, children grow more quickly, adult stature is greater and general health and physique improve.

In India the economic situation is desperate. The country does not produce enough food for the use of its people and the average individual purchasing power of the vast majority of the population is totally inadequate to enable them to buy sufficient food. If a proper nutrition survey for India was carried out it would show that a very small percentage indeed of the population is adequately nourished — certainly much smaller than in England.

The Population of India has been increasing and the last census of 1931 showed an increase of 34 millions or

---

*Note. Standards adopted for "a moderately active man" were 3,000 calories, 67 grammes of protein, 0.68 gramme of calcium, 1.2 grammes of phosphorous, 15 milligrammes of iron, 5600 International Units of vitamin A and 1000 International Units of vitamin C per day.

10.6 per cent over the population of 1921. But the area of land under cultivation has not increased in the same proportion. While the index number of population has gone up to 120 in 1934-35, taking the average of 5 years from 1910-11 to 1914-15 at 100, the index number of area of land under food grain cultivation has gone up from 100 to 112.4 only. There has been a slight improvement in the food supply during the recent years but still there is a food deficiency. Mukherjee estimates, "for India a food deficiency for 12 per cent of the population in a year of normal harvests" and suggests that "not merely should cropping be more diversified but a systematic crop and food planning, which may increase the protein yielding capacity per average holding and distribute the human and cattle power to better advantage throughout the year, must also be pushed systematically." Mukherjee further points out that "the dairy products, the adequate supply of which is particularly necessary for the proper health and development of a non-meat eating population are becoming scarcer for the great masses of the people." India has 214 million cattle but 125 million heads are unproductive and unless these worthless and superfluous beasts are removed and a planned programme of restriction of cattle numbers and of controlled breeding is carried out, no improvement in the dairy farming can be anticipated.

As regards the purchasing power of the population is concerned, Sir M. Visvesvarya in his book "Planned—Economy for India" gives the income per capita (per annum) in India as Rs. 12 from industries and Rs. 59 from agriculture and compares it with the income from industries and agriculture in Japan, Sweden, United Kingdom, Canada and the United States of America. He remarks, "It will be seen that the per capita income from industries in India is insignificant, while in all the other countries mentioned, it is their principal source of wealth. Having regard to the size and population of India, the average earning power of the Indian is the lowest among nations which have an ordered government."

Therefore, the question of nutritional problem of India is really for the Committees that are dealing with economic problems of the country as a whole. To us it appears that the only solution of improving the economical condition of the people is to rapidly industrialise the country. This however would take time. In the meanwhile immediate steps must be taken by the State in providing•certain amount of relief on the lines of the work done in this direction in countries like England.• There, large sums of money are spent in providing extra nourishment for expectant and nursing mothers and for children under the age of 5 years. Educational authorities have the power to provide free meals for children attending public — elementary schools, if the parents are necessitous and unable to pay. Under the Milk in Schools Scheme, Government pays a large contribution to the Milk Marketing Board and over a quarter of a million scholars are receiving milk either free or at a very small cost during the school hours. The Unemployment Assistance Board makes allowances to unemployed persons within the scope of Unemployment Assistance Act; and these allowances may be increased where the need for extra nutrition is proved.

The Dietary Standards of India

The position of the food supply in India and the purchasing power of the people, being so unsatisfactory, the question of fixing dietary standards would be premature. It is, however, desirable to indicate what we should aim at in this respect.

The Technical Commission of the Health Committee appointed by the League of Nations has carefully gone into the question, and has drawn up a report on the Physiological Bases of Nutrition. The Commission recommends, "(a) An adult, male or female, living an ordinary everyday life in a temperate climate, and not engaged in manual work is taken as the basis on which the needs of other age-groups are reckoned. An allowance of 2,400 calories net per day is considered adequate to meet the requirements of such an individual.

"(b) The following supplements for muscular activity should be added to the basic requirements in (a):

Light work:	upto	75	calories per hour	of work
Moderate work:	,,	75-150	,,	,,
Hard work:	,,	150-300	,,	,,
Very hard work:	,,	300	calories and upwards per hour of work."	

"**Protein Requirements.** In practice, the protein intake for all adults should not fall below 1 gramme of protein per kilogramme of body-weight. The protein should be derived from a variety of sources, and it is desirable that a part of the protein should be of animal origin." (B.M.A. Committee suggest that the proteins from animal source should be half of the total protein foods).

"**Fat Requirements.** Fat must be a constituent of the normal diet, but the data at present available do not suffice to permit a precise statement of the quantity required. The high content of vitamins A and or D in certain fats justified their use in liberal amounts." The Committee of Nutrition (B.M.A.) recommend 100 grammes of fat daily and add that as much of this fat as possible should be derived from certain animal sources.

The diet must also contain a certain amount of "protective" foods (foods rich in minerals and vitamins). The most important of these are milk products, eggs and glandular tissues. Green, leaf vegetables, fruit and meat come next in importance."

Akroyd and some other workers have rejected these standards and propose some lower standards basing their recommendations on the fact that the basal metabolism of Indians is lower than that of residents in other countries; and, therefore, they suggest that a smaller quantity of food should suffice. It is customary to attribute this lower basal metabolism noticed in India to climate. Recent work, however, done at the Haffkine Institute shows that this low basal metabolism is probably entirely due to the low content of protein in the Indian dietary. It is further pointed out that there is no adequate scientific data to show that climate or race affects the basal metabolic rate. Hence there is no justification for proposing a lower standard of diets for Indians.

Although these are optimum standards, they should be accepted and attempts made to reach these standards as far as possible.

We have refrained from framing any standard diets. Diets are to be fixed taking into consideration the crops produced, in the districts and the tastes and dietetic habits of the people. What would be a suitable diet to a worker in Bombay would not appeal to a worker in Punjab. Each district would have to frame its own standard diets, from the physiological standards mentioned above. Variety should be aimed at and seasonal scarcity and plenty of individual foodstuffs should be taken into account.

APPENDIX II

MEDICAL TRAINING AND RESEARCH

By Dr. J. C. RAY, M.D., Director, Indian Institute For Medical Research, Calcutta

In formulating a scheme in outline for medical training and research, it is important to consider

(i) the aim which we wish to achieve in course of, say, 20 years, which should bring us at least to a par with Western comunities, and

(ii) the requirements of our people during the transitional period, which should be consistent with the aim of continued progress on scientific lines.

We wish to deal here only with the Western system of medicine. This is the only system which is based on the well-known methodology of science, namely, experimentation and observation with proper controls. The indigenous systems of medicine which were primarily based on empiricism have no doubt made valuable contributions to our store of knowledge. But it should be our aim to test scientifically the teachings of these systems of medicine and to incorporate those, which are proved to be scientifically valid, into the Western system of medicine, which alone should be recognised by the State. It may be pointed out that empirical methods of treatment were also prevalent in all other countries, and with the progress and enlightenment of those countries empiricism has been steadily replaced by the scientific system of medicine. There have been attempts in this country during recent years to give a semblance of science to indigenous systems of medicine by providing laboratories and dissection of human bodies etc. But the correct course should be to accept the large body of scientific knowledge in Western medicine as the nucleus round which only the scientifically tested knowledge derived from indigenous systems of medicine should grow. Medical training is of the greatest moment in relation to the health and welfare of the present as well as future generations in this country, on which the power and prosperity of our nation will be built. The scheme of training which we should adopt, therefore, should be unprejudiced by considerations of sentiment, and should be based solely on scientifically tested knowledge.

Our requirements of medical workers

It is well-known that the number of medically trained men in this country is extremely inadequate for the population of India, there being only about 25,000 medical men for over 350 million people. It should be our plan to have one medical man per 1,000 of the population. At the moment the bulk of the medical men are stationed in the cities and towns so that there is a great scarcity of scientific medical help in rural areas.

The requirements are

(1) a very much larger production of scientifically trained medical men, and

(2) their own distribution throughout the country.

This cannot be done without State organisation and State direction. In the following we shall assume the existence of a Government, which, if not based on socialism, is at least thoroughly conscious of its duties to the health of each and every one of the people of India, because it is health which in the truest sense forms the bedrock of happiness, prosperity and progress.

If we plan to produce one doctor per 1,000 of the population (which may be taken to be 400 million) in course of the next 20 years then we have to turn out 20,000 medical men each year. This number is not excessive but just adequate, because it includes medical practitioners, specialists, research workers, and public health men. For turning out this number each year about 200 medical institutions will be necessary assuming each institution to be able to deal with such number of students as will enable 100 people to pass out in the final examination each year. At present there are 10 colleges and 25 schools in India. In order to expand this number into 200 institutions, as far as possible evenly distributed throughout the country, with proper consideration given to the density of population in different areas, it would appear that one medical institution per district roughly would serve the need. This should be feasible as each district has a hospital round which the institution can grow. This would (1) modernise the hospitals, (2) provide centres for medical training, (3) help to maintain and improve the standard of urban and rural medical practitioners, and (4) impart a progressive outlook to the whole district population particularly with reference to hygeine and public health. It is thus alone that the whole population of India can be drawn into the medical reconstruction of the country and cement organic unity between the medical men and general people.

The provision of teaching staff for these institutions is an important consideration. Teachers will naturally be required to know much more than they teach. If 200 institutions could be produced in one year in the country then there would obviously be a dearth of both teachers as well as of students fit for receiving the medical training. But if an attempt is made in reaching this consummation, then the number of institutions, which can be started during the next 2 years is not likely to lack teachers. The appointment of trained and experienced medical men, some of them having post-graduate training, as teachers in these district institutions would at the same time help the even distribution of medical men who are now largely concentrated in big cities.

Medical Teaching Institutions

It is desirable that our aim should be to fix a uniform adequate standard for medical education in this country. The distinction between medical schools and colleges, as at present existing, should be removed. The colleges which are situated in the most populous centres should have organised post-graduate schools meant for (i) Research, (ii) Specialisation and (iii) Training of teachers. This, however, does not and should not preclude other medical colleges, not having organised post-graduate departments, from doing research work or specialised studies.

Syllabus

We have considered the syllabuses of medical studies in this country; and, in the light of such studies in Western countries and of the increasing advances in medical knowledge and their application to India, we would suggest the following revised syllabus in outline for adoption in all our medical institutions. Students should join the medical institution after matriculation.

1. Pre-Medical Course— 2 years.
   Subjects:—
   - Physics, Biophysics.
   - Chemistry—Inorganic, Organic, Analytical, physical and colloidal.
   - Zoology — including elements of comparative Physiology and Genetics.
   - Botany.
   - Elements of Biochemistry.
   - Elements of Microbiology.
   - Foreign language—English.
2. Pre-Clinical Course— 2 years.
   Subjects:—
   - Human anatomy including embryology and histology.
   - Human Physiology—Elements of normal psychology.
   - Biochemistry and Nutrition.
   - Elements of methods of clinical examination.
   - Microbiology.
   - Pharmacology and Toxicology.
3. Clinical Course— 3 years.
   Subjects:—
   - Pharmacology and Toxicology including practical Pharmacy.
   - Pathology, Microbiology and Psychiatry.
   - Pediatrics.
   - Dermatology and Syphilology.
   - Surgery—Orthopaedic surgery.
   - Urology.
   - Oto-Rhino-laryngology.
   - Roentgenology.
   - Midwifery—Infant Hygeine, Gynaecology.
   - Hygeine and Public Health.
   - Forensic Medicine.
   - Social, legal and ethical obligations.
   - History of Medicine, knowledge of Medical Organisation and Administration.

The advantages of having a premedical course of the fundamental sciences in the medical colleges are:—(i) that the students begin their studies in a medical atmosphere and tend therefore to get a medical orientation right from the beginning; and (ii) that the teachers and research workers in the specialised medical sciences remain in contact with those in the fundamental sciences thus ensuring a happy co-operation between pure scientists and medical scientists, which has been so fruitful of great discoveries in recent years throughout the world. Those who may not be able to pass the pre-medical course or do not desire later to pursue the medical course may join colleges meant for general scientific or other studies. Into the pre-medical syllabus we have introduced three new subjects, namely, Elementary Physiology, Elementary Biochemistry and Elementary Microbiology, as we feel that the students should get a perspective view of all these sciences from the beginning. It is important that at this stage the students should not be over-burdened with isolated facts, but should be given general elementary knowledge with special emphasis on inter-relationships rather than on a mass of isolated details. This would give them a good introduction to all the medical sciences which they have to study in greater details in their pre-clinical course. This would give them the glimpse of a connected picture and create interest right at the beginning in the whole of medical science.

Into the pre-clinical course we have introduced Biochemistry, Microbiology, Elements of Pharmacology, Elements of Pathology and Elements of the methods of clinical examination. We feel that the students should have some knowledge of all those subjects before they come to the clinical studies. The general principle is that subjects should not be treated as separate subjects to be taken at distinct stages; but should be treated as an organic whole, the knowledge imparted proceeding from elementary to higher stages from year to year. Further, the type of teaching, for instance, in Anatomy, should be such as is in consonance with the practical needs of medical practitioners, and should place far greater emphasis on essentials rather than on less essentials. This point requires to be drawn attention to, as untold number of medical students passing out of institutions will testify how much their minds have been over-burdened with less essential details, which undoubtedly should be learnt by would-be teachers and workers receiving post-graduate or research training, but may not be so necessary for persons engaged in day-to-day medical practice.

The same principle applies to teaching in the clinical course. At present in India, most of the time is devoted to theoretical lectures unconnected with clinical observations. While a background of systematic clinical medicine should be given, much greater time should be devoted to examination of actual clinical cases, and the theories should be derived rather from such clinical demonstrations than from extensive theoretical discourses. In all subjects to be studied in clinical course purely theoretical lectures should be cut down to the minimum and should be replaced by numerous clinical demonstrations. Throughout the 3 years' course this principle should be borne in mind. At present there is a great wastage of time and effort which we cannot afford. The entire teaching should provide a correct balance between clinical work, laboratory work and lecture work.

In admitting students, all medical colleges must be thrown open to both sexes, and women should be particularly encouraged to come for medical training, as they are specially suited for particular types of work, and as men will be required in greater numbers in future years for the industrial development of the country, as the post-war history of the Soviet Union shows.

In all examinations knowledge which has the greatest applications to Indian needs should be stressed and no importance attached to memory work only. The final examinations should reveal whether the candidates have learnt to think medically and tackle the problem of disease with confidence in a proper and scientific manner.

Medium of teaching

The teaching as well as the examination may be conducted in English or preferably in the mother tongue with the use of English or international nomenclature, and other English words whenever necessary. Text books for the present should be in English; but arrangements should be made to produce all the necessary medical literature in the mother tongue right from now in a systematic manner. The Roman script should be adopted for writing these books. Efforts should be made to introduce the Roman script for answering the question papers in the mother tongue.

Requirements Of An Ordinary Medical College And Hospital For Imparting Medical Training

Number of beds—minimum 300..

Allotment:—

Medical ..	100
Surgical ..	100
Midwifery &Gynaecology ..	50
Special beds for Eye, Ear, Nose & Throat; Children ..	50

Number of students to be admitted annually 100

Hospital Staff

Medical Dept.	Physician	2	
	Deputy Physician	2	
	Resident House-Physician	2	6
Surgical Dept.	Surgeon	2	
	Deputy Surgeon	2	
	Resident House-Surgeon	2	6
Midwifery & Gynaecology Dept.	Obstetrician	1	
	Gynaecologist	1	
	Deputy Gynaecologist	1	
	House-Surgeon	2	5
Eye Dept.	Surgeon	1	
	Deputy Surgeon	1	
	House Surgeon	1	3
Ear, Nose & Throat Dept.	Surgeon	1	
	Deputy-Surgeon	1	
	House-Surgeon	1	3
Radiological Dept.	Radiologist	1	
	Asst. Radiologist	1	2
Skin Dept.	Dermatologist	1	
	Asst. Dermatologist	1	2
Psychology Dept.	Psychologist	1	
	Asst. Psychologist	1	2
Clinical Pathologist			2
Resident Medical Officer			4
Registrar			4
			39

College Staff

Principal and Superintendent	..	1
Professor of Anatomy and his staff	..	5
" " Physiology "	..	5
" " Pathology "	..	5
" " Medical Jurisprudence	..	2
" " Hygeine	..	2
" " Pharmacology	..	3
" " Biochemistry & Nutrition	..	2
		25

Staff For Pre-medical Training

Professor of Physics and his staff	..	5
" " Chemistry "	..	5
" " Biology "	..	5
" " English "	..	2
" " Mathematics "	..	1
		18

Post-graduate Teaching

As many of these medical colleges as possible, particularly those which are situated in populous centres, should have post-graduate and research departments attached to them for imparting specialised studies in particular lines and for specialised research by teachers and post-graduate students.

The students specialising in particular lines should be entitled to a diploma of the particular line after definite courses of study and work in hospital, the periods of which may vary according to requirements. Those post-graduate students who, after receiving the diploma, desire to proceed for research should be entitled to a doctorate after presentation of their theses. If feasible special hospitals should be earmarked for post-graduate and research students. Medical research should be one of the activities of the post-graduate departments of the medical colleges, otherwise post-graduate teaching and training cannot be maintained up to the mark. These departments should also provide for refresher's courses for medical practitioners, which should form a routine function of these departments. These practitioners should preferably be taken from rural areas and given a refresher's course of 4 months after every three or four years. The post-graduate studies should concern not only special branches of medicine, but should also include particularly (1) Hygiene and Public Health with special emphasis on Preventive Medicine and (2) Maternity and Child Welfare.

Medical Research

Medical research should form an essential and central part of the scheme for the medical progress of this country. There should be a Central Medical Research Council with as many Advisory Boards as necessary concerning different subjects. The Central Medical Research Council in co-operation with the Advisory Boards should determine (1) the lines of development of existing research institutions and (2) the establishment of new institutions. The institutions should concern themselves both with pure and applied research, should admit only medical or other science graduates and train them in research. These institutions should be of two kinds: (1) Institutions with several departments concerning fundamental sciences like Bacteriology, Protozoology, Biochemistry, etc., and (2) Institutions exclusively devoted to research in a particular line like, for instance, Malaria Research Institute, Tuberculosis Research Institute, Cancer Research Institute, Nutrition Research Institute, etc. These institutions should work on the advice of the respective Advisory Boards. There should also be facilities at these institutions for post-graduate teaching, but not to the detriment of research, for which these institutions should be primarily meant. These institutions should preferably have their own hospitals. Such institutions need not be numerous and they should be established with special reference to the localities where they are suitable from the standpoint of materials and resources available. There should be no objection to having two research institutions dealing with the same subject in different provinces, provided overlapping is avoided as far as possible. Apart from these research institutions, it is desirable to have one All-India Medical Research Institute, which will deal with all fundamental subjects and with medical subjects affecting the largest number of people and which might at the same time function through a bureau as a co-ordinating organisation for the different research institutions of the country. Its function should, however, be only to co-ordinate and not to command. The selection of research institutions, which should be started now, and the development of the medical research institutions already existing are matters of detail and should be gone into by a Central Medical Research Council, which should be set up by the National Planning Commission, when that body is formed.

Requirements During The Transitional Period And Auxiliary Medical Services

In the foregoing we have given a plan for the provision of an adequate medical service for the country. Even if the plan cannot be launched in its entirety owing to obvious reasons, a special committee should consider how much of it can be put into operation at once keeping in mind that progress must be maintained at a quick pace in the right direction.

We have now to consider the question of giving medical relief, applying the principles of prevention, putting into effect sanitary and public health measures and spreading the knowledge of hygiene in rural areas. During the transitional period it it necessary to turn out what we may call "certified medical workers" to discharge all the above functions. For this purpose we do not wish to keep or revive the existing medical schools as that would tend to give a permanency to the inadequate medical training provided in those schools. We would recommend that "auxiliary medical institutions" should be established, either in association with the medical colleges or, where such colleges have not been established, for instance, in many district towns, in association with the district hospitals which should be modernised for the purpose. Teaching should be provided in these institutions by the hospital staff, local practitioners, and additional teaching staff if necessary.

Intelligent young men and women, preferably those who have matriculated from the village schools (but not necessarily only those) should be drawn into these institutions, where they should undergo two years' intensive training. For this purpose, intelligent adults with a knowledge of English, the mother tongue and of elementary mathematics may also be admitted.

The training will include:

1. Elementary Physiology, Anatomy and Chemistry.
2. The diagnosis and treatment of the commonest diseases on scientific lines.
3. The principles of hygiene and sanitation.
4. The principles of preventive medicine.
5. Elementary surgery.
6. Elementary knowledge of laboratory technique and of collection of clinical materials.
7. Knowledge of dietetics.
8. Pharmacy, elementary pharmacology and the art of dispensing.
9. First aid and preliminary treatment.

If trained pharmacists are not available, these certified medical workers should be put in charge of village dispensaries. They should be in touch with district headquarters where they received training and should come there for supplementing their knowledge whenever time permits. They should be the medium through which the trained medical staff of the district hospital and trained medical practitioners of the district town should be in touch with rural conditions and should be thus brought into the national task of rural medical relief.

Pharmacists

Those who wish to learn pharmacy as a special subject may be divided into two categories :—(1) those who wish to be what we call compounders, and (2) those who wish to be trained pharmacists, pharmaceutical chemists and workers or leaders of pharmaceutical industries.

For the first category we think the Auxiliary Medical Institutions referred to above may serve. The syllabus would require some adjustment, particularly for emphasising pharmacy, pharmacology and dispensing part of the syllabus. Adjustments for the necessary knowledge of Chemistry and Botany may also be done. The persons should also be eligible to serve as certified medical workers in the villages.

For the second category we believe that departments of three years' course should be attached to medical colleges or to Universities after two years' course of basic sciences.

Maternity And Child Welfare

Women should be particularly encouraged to take the above course of certified medical workers with special training in maternity and child welfare. It would be good if we can provide for one such woman certified medical worker for each unit of population of 1.000.

These women, along with others who might have received training in the midwifery department in a college for 2 years, should be allowed to perform the duties of midwives. The certified women medical workers, however, will be allowed to discharge all the functions of a man certified medical worker in the rural area. Their functions are, therefore, more comprehensive than those of simple midwives.

Nurses

Nurses will be trained in the city and district hospitals much on the same lines as now.

Laboratory Technicians

The auxiliary medical institutions can also serve to train laboratory technicians, of whom there will be increasing need in future years.

Financial Aspect

We have assumed in the foregoing that even if our State is not a Socialist one (which alone can ensure real planning), it takes a vital interest in the health and well-being of our people. It is obvious that the schemes outlined above cannot be implemented unless there is the closest co-operation between the Central Government, the Provincial Governments, the Municipalities, the District Boards, the Local Boards, the Union Boards, the existing medical profession and the general public. It is clear that the poverty-stricken rural population cannot by itself support either the trained scientific practitioners nor the aforesaid certified medical workers with its own the Government in co-operation with constituted public bodies. We think that the Central Government and the Provincial Governments should establish the medical colleges and their attached hospitals. The District Boards, the Local Boards, the Union Boards, with the help of subsidy from the Government should undertake the establishment of Auxiliary Medical Institutions of the district towns. Necessary financial adjustments in the budgets of the bodies concerned should be made, Taxation should be resorted to, if necessary, but it should be borne by people having taxable incomes on a revised sliding scale. The comprehensive financial details should be worked out by a committee appointed for the purpose.

Co-ordination Of Medical Education

Just as a medical research council will be necessary for advising on and co-ordinating medical research in this country so also a medical education council for the whole of India should be established for co-ordinating medical education in the country and keeping its standard even and from time to time for considering schemes for improvement.

APPENDIX III

A PROPOSED SCHEME
of
RURAL CO-OPERATIVE HEALTH SERVICE IN CONJUNCTION WITH RURAL HEALTH AND SANITATION

. by

Syed Fakhruddin Hussain-Khan,

B.S., M.S.P.H., Dr.P.H. (Mich.U.S.A.)

RURAL CO-OPERATIVE HEALTH SERVICE.

A Rural Health Department furnishes the best means for conducting in each village special health activity as a part of a general health programme. In modern times Rural Health Officer has become an integral and important part of the Public Health Machinery in many European and American countries.

The problems and methods to be used in the solution of various activities of Rural Health Service will have to fit the situations. But in this regard the co-operation of the Rural Health Officer in charge of the work, with the authorities, practising physicians, social and educational agencies and the public, generally, will play the most important role.

We give here in brief a plan of organisation cost and activities of a Rural Health Service.

How To Establish A Rural Health Service

The first step to secure the Rural Health Service is to conduct a campaign of education in the district to show the advantages and economy of public expenditure for this purpose. The religious sentiment in favour of this kind of work should be vocalised and activated. The leaders of Society, the Government Officers, the Educators and Practising Physicians (Ha-Va-Do, Hakims, Vaids and Doctors) should be informed and their assistance solicited. Existing " AKHARAS ", Educational or Social

Clubs or Religious Societies (of all faiths and creeds) should be approached for active co-operation to form a Rural Health Service.

In other instances it may be desirable to form a Health Advisory Committee composed of leading citizens to organise the public sentiment. When sufficient number of citizens is convinced of the desirability of having a Rural Health Service, a meeting should be called in the presence of district officers and a request should be made for the registration and establishment of a Rural Service Organisation with necessary rules and regulations.

"A FIVE YEAR PLAN"

The Plan should be definite, the contemplated cost should be known and the results to be expected should be clear. A fixed period must be assigned for the completion of the itemised plan and at the end of the period, success must be appraised in figures which must be standardised previously for evaluation. The authorities should be approached and favourable sentiment created to request assistance from the State or Provincial Health Department. When public co-operation is gained, no Government can refuse the asisstance asked. Sometimes the State or Governments are willing to appropriate funds without waiting for an expression of public sentiment, and in the past they have laid elaborate schemes but failed to achieve the goal, because public co-operation was lacking. Therefore the importance of informing the people and arousing their sentiment cannot be very strongly emphasised in the success of any Public Health Programme. Sometimes the presence of an epidemic will serve to capitalise the need for Rural Health Service. Such opportunities must not be lost sight of.

A RURAL HEALTH SURVEY.

A Rural Health Survey will be most essential to show the importance of corrective measures, and will bring to light the existing inefficiency or waste of funds by unco-ordinated and non-co-operated Health Services. On the basis of information gathered, practical measures for the correction of obviously insanitary conditions, flaws in the unhealthy habits and shortcomings of medical practices of the people are brought out and recommendations by the investigators are made. Then the local people thereof will take the trouble to inform themselves of the humane and the business aspect of preventing diseases and will apply their knowledge in a commonsense manner. The detailed study of a Rural Area no doubt involves time, money and great trouble, but it is essential to the development of an adequate Health Programme based upon actual rather than assumed needs. Besides, it supplies necessary information and gives relative importance to various health problems, and gives a training ground for health workers, and it establishes a basis for comparing progress over a period of years.

Health Campaigns

In connection with the establishments of the Health Services of the Rural Areas, many Health Campaigns may be carried on against Tuberculosis, Cancer, Hook-worm, Malaria, Guinea-worm, Small-pox, Typhoid, Dysentery, Goitre Cholera; and Plague Control, Food and Milk sanitation and purification and protection of Water supply, Farm sanitation, Venereal Clinics, Health Pageant, Brush up and Clean up Weeks. Campaign against malnutrition and deficiency diseases, School Health Examinations and Biannual Baby Weeks, Oral Hygiene, Eye Clinics Physical Culture, Correction of endocrinological deficiencies, Infant and Preschool Hygiene, Nutritional Clinics, Mental Hygiene, Prenatal Clinics, School Hygiene, etc.

Campaigns may be linked sometimes with State functions, as Coronation Day, 'Holy' men's Birthdays, 'Armistice Day,' or religious festivals like Dashera,' 'Mohurrum,' 'Diwali,' 'Holi,' 'Id,' 'Ganpati,' etc. If tactfully organised these may overtake the religious theme and convert them into Health Festivals. Anyway, by this means much national waste of money and energy can be directed to a good cause. Social harmony may be strengthened between various communal groups and unity brought about without talking about it. Many evils of the country may be removed and corrupted religious practices reformed, with the approval of the religious leaders and reformers.

Promotion Of Child Health

Parents' and teachers' interests are aroused by the Health Examination of Children, Baby Show, School Health Examination, etc. But this must not be the end of our programme. We must not only learn about the community's health by this means, but we also have to protect the community. Particularly communicable diseases are easily controlled, but the best advantage of all is that we correct the defects in early age and prolong the age of the future man. Our ideal should be to interest the child to understand and improve his own health and physical welfare.

Crippled Children's Aid may be organised and people enrolled to help them by an agreed sum annually as membership to the society or by donation. Through such organised efforts crippled, blind, deaf and dumb, feeble minded and undernourished children are helped. And the burden of their support of education and correction of their defects is lessened or removed from individual and family.

Plan Of Organisation

In a district where the largest city does not exceed 50,000 population it is desirable in the interest of efficiency and economy to perform a combined Country (Rural) and City Health Service under the same Health Officer. The appointment of the Health Officer should be removed from partisan political control and he should be given all possible responsibility compatible with efficient service. Political appointee cannot be expected to progress with the times and provide efficient health-protective service of a higher standard.

The Public Health Officer is responsible to the Rural and Provincial Health Authorities for the proper and efficient performance of his duty. He should agree to devote his entire time to the duties of his office and not to engage himself in private practice or any other service. It is desirable to secure a Health Officer who has had special Public Health training or experience. But the personal equation of the Health Officer is the most important single factor for success. The entire personnel of the Rural Health Department should be appointed by and work under the direction of the Health Officer.

The Rural Health Service Officer should direct the general policies of the several special divisions of Rural

Health Service Department, such as Maternity and Child Welfare, Tuberculosis and Malaria Prevention and sanitation etc.

Expert assistance and advice in all matters of Health and Sanitation, Medical and Laboratory facilities should be available from the Provincial and Central Government Institutions, particularly in connection with special Health Problems affecting the district, the province, the country and international orders. The Rural Health Service should serve as the agency by and through which most Provincial and Central Governments' Health and Medical Activities are conducted in the Rural Areas.

In other countries International Health Board, Federal Health Department and Provincial Health Department have made funds and personnel available with which to initiate the development and assist in the maintenance of Rural Health Service. The same may be demanded in this country as well. However, the Rural Community may be expected to provide at least one third of the budget for the current expenses in succeeding years after the first year of its establishment. The initial cost may be financed by the Public Subscription or by the Central or Provincial Governments or both.

Personnel And Cost Of The Rural Health Service

The cost of the Rural Health Service will depend on the area, population, and the local situations and Health Problems affecting the particular district. It will also depend on the resourcefulness of the Health Officer, the taxable resources of the country, the economical status of the people and, last but not the least, the willingness of the people to co-operate and help themselves in providing themselves with the Health Service.

The minimum cost of running a Rural Health Service may be estimated at, at least Rs. 12,000-|-| a year. This includes salaries of the staff and their travel and record expenses only. The cost of medicines and supplies will depend on the local conditions of health, hygiene and sanitation. The initial cost of Equipment, Buildings, Supplies, Furnishings and

Literature etc. may amount to a hundred thousand or more depending on how much one wishes to add and how elaborate a scheme one wants to make. We shall however, confine to a small unit on a minimum basis, and allow its gradual expansion from year to year, each year adding a little more and replacing the old. Definite figures can be given only when we call upon the engineers and suppliers to give us their estimates. However, we give in the appendix, the List of Equipment, Supplies, Apparatus and Instruments, Furnishings and Plans for buildings and grounds.

Activities, Duties And Responsibilities Of Rural Health Service

Conditions and practices may vary widely in different localities but there are certain Health and Sanitary Problems peculiar to the locations which must be given importance and first consideration. This should be left to the discretion of the Health Officer, who has studied the situation. It may be an epidemic, or improvement of water supply, or food and dairy sanitation, or malaria control and maternity and child welfare, whatever he may regard of greatest importance must be taken up immediately and most ardently.

The Rural Health Programme cannot neglect any of those problems of Health, Hygiene and Sanitation which directly or indirectly concern the well being of the people. The control of preventable diseases e.g. Malaria, Typhoid, Plague, Cholera, Tuberculosis, Pellagra, Guinea worm, Kalaazar, Undulent Fever, Goitre, Intestinal diseases, Deficiency diseases etc. etc. Whether the diseases are communicable or due to deficiency of balanced diet or defective water supply or due to lack of sanitation and proper environment or due to ignorance and superstition of the people, or due to social or economical causes, all are the concern of the Health workers. No Rural Health Programme may be considered complete if it misses any of those factors on which the health, happiness and longevity of men, women and children depends.

Health Examination

Health examination of Food and Milk handlers is very much needed in a country where insanitary habits and ignorance to hygienic laws exist amongst the people. Sweet vendors, tea shop workers, grain and ghee shop keepers, pan-walas, Halwai, 'Nanbai' and butchers, in fact all without exception are filthy and dirty in their methods of handling food and drinks. None of these should be allowed to touch or come near the supplies that are consumed uncooked or unwashed unless they have a clean certificate of health.

Health Inspectors without police powers and underpaid, not selected from intelligent and respectable members of the society, cannot be expected to do the needful. Besides, the judicial department of the Government should be taught to deal strictly with those who are a danger to the health and lives of infants, sick and innocent people. A strong public sentiment should be roused against criminal negligence of those who handle, supply or sell milk and food.

The Food Inspector should be a trained Public Health man, who should be able to recognise unhealthy animals and prevent their slaughter, he should see that the grain storage is free from rats and insects, he should be able to recognise stale and foul food, he should detect adulterations during inspection, and understand the method of preparations, and report and get sales closed or get punished by sending to penitentiary those, who violate hygienic and sanitary laws of the country.

Quarantinable Diseases

India is not yet recognised by the International Hygiene Association as a safe and sanitary country because we have not yet made Cholera, Plague, Yellow Fever, Typhus, Smallpox, Typhoid, Para Typhoid, Dysentery, Pul. T. B., Leprosy, Anthrax, Pneumonia, Encephalitis, Chicken pox, Rubella, Septic Sore Throat, Cerebrospinal Meningitis, Diphtheria, Measles, Whooping Cough, Rocky Mt. Fever (Tick Fever), Scarlet Fever, Poliomyelitis, Influenza, Gonorrhea, Chanceroid, Gastroenteritis, Mumps, Pellagra, Rabies, Tularaemia, Black Tongue and and all communicable diseases quarantinable.

Mobile Units

If our poor, ignorant, diseased and helpless villagers cannot come to the cities and Health Centres located far off, we can send Mobile Units wherever possible on a weekly or monthly or yearly trip to help them.

Delousing plant or Fumigation unit: against the bed bug, lice and fleas and house pests (Bollveevil in cotton.), Rat traps, rat proofing, elimination of rat harborages, Eradication of rats, snakes, scorpions etc. by poison.

Dog traps and catchers. Poisoning or shooting. Anti-Rabies sera.

Laboratory for water, milk, sputum, faeces, urine, food etc. (Bacteriological, serelogical and chemical works. Tuberculin test, Purquet test, Wassermann test, Frei test, Donovan test, etc.

Dental Clinic.

Eye Clinic.

Educational Unit. Cinema, Posters, Exhibits.

Ambulance.

Surgical unit for minor operations.

Scope Of Functions And Activities Of Rural Health Service.

1. Enforcement of the Quarantine regulations and suppression of Epidemics. Control of communicable Diseases.

2. Measures for the Control and Prevention of Epidemics e.g. Cholera, Plague, Typhoid, (Para A and B), Small Pox, Trachoma, influenza, etc.

3. Venereal Disease Control. Its Prophylaxis, Care and Prevention. (Free Clinics).

4. Control and Safeguarding of Water supplies.

5. Sanitation in Rural and Urban Areas. (Soil, and water pollution, prevention. Human and Animal disease control.)

6. Disposal of Sewage, collection of Garbage and construction of Drainage. (Insect and disease carrier control.)
7. Protection of Milk and Milk products.
8. Campaign against Rodents and removal of House pests. Extensive rat proofing of granaries and food storage places. Elimination of rat harborages.
9. Sanitary Engineering. (Light, Ventilation, Plumbing, Fire hazards, Housing.)
10. Inspection of food and drugs, Engineering Inspection, Plumbing Inspection, Sanitation of Raw supplies, Inspection of Hotels, Health Certificates for Food handlers.
11. Nutrition Clinics. (Dietetics for Poor. Reforms in dietary habits. Analysing adulterated Food. Standardisation of Milk, Ghee, Butter and other foods.)
12. Pre-natal and Maternity care.
13. Infant Welfare and Pre-school child Welfare.
14. School Health Examination and School Sanitation.
15. Oral Hygiene. Dental Clinics.
16. Heredity and Eugenics.
17. Sex Hygiene. (Birth control, Prostitution, Illegitimacy.)
18. Social Hygiene, Mental Hygiene, Industrial Hygiene, Adult Hygiene, Camp Hygiene.
19. Mental Diseases. (Prevalence, Investigation, Isolation, Rehabilitation.)
20. Care and treatment of Dependent, Delinquent, Criminal and Nervous disorders. (Supervising of Penal and Correctional Institutions, Juvenile homes, Psychopathic Wards, Hospitals, Sanatoria, Insane Asylums, Jails.)
21. Prevention of Degenerative diseases of the Middle age.
22. Occupational Health Hazards. (Health of Industrial workers.)
23. Health Insurance and Sickness Benefit.
24. Annual Health Examination Programme. Prolongation of life.
25. Health Education, Radio Broadcasting on Health topics, Publication of Weekly News Letters, Bulletins, Posters, Literature on diseases and

their prevention, Statistical reports, Lectures, Cinema Films, Exhibits, Articles in Newspapers and Magazines, Supply of Speakers on Health topics. Dramas, Health Processions and other methods of dissemination of Public Health information.

26. Training of Public Health nurses, workers, inspectors and laboratory assistants.
27. Graduate and post graduate courses in special fields for Physicians, Sanitary Engineers, Public Health Officers. e.g. 'Sanitation in Villages'; 'New Technics in Prevention and Cure of T.B.'; 'Sanitary Engineering or Sewage Treatment'; 'Nutrition Problems of Masses in Rural Areas'; 'Organisation of Medical and Public Health Institutions; 'Rural Health Centres'; 'Field Work in Control of Epidemics.'
28. Special Divisions. (Cancer, T.B., Heart Diseases, Nervous Diseases. Prevention and Cure. Chest Clinics. T.B. Prevention. Correction of endocrinological deficiencies.)
29. Medical and Hospital Division.
30. Laboratory Service. (Wassermann Lab., Antitoxin and Vaccine Lab. Diagnostic, Manufacturing Biological, Chemical, Bacterial, and Pathological Laboratories.)
31. Laws forbidding Quacks and Quack Remedies or Nostrums.
32. Survey and control of habit forming Drugs. (Opium, Alcohol, Narcotic Farms for anti-social and criminal Addicts, Isolation, Rehabilitation.)
33. Division of Statistics and reporting of communicable Diseases for local and outside purposes by "Quarantine" etc. (Collaborating Epidemiologists.)
34. Administrations. (Divisions of Personnel and Employment, Accounting and Book-keeping, Salaries, Supplies, Buying Replacing etc.)
35. Preparation of Estimates of Appropriations to carry on activities. Recommend Improvements.

All too frequently the modern Public Health worker becomes so engrossed in niceties of Public Health that the basic elements of sanitation are either forgotten or wilfully overlooked.

There are several factors which occasion this attitude. In the first place, the well-trained Health worker is not afforded an opportunity to display his ultra scientific training in a prosaic privy-building campaign since the procedure involved is based largely upon common sense and decency. Quite naturally he concluded that such common place activities should not engage the serious attention of one with his intellectual attainments.

Day Nurseries or Creches are not to be looked upon as temporary shelters for children but as training and health centres as well, that is why it is important that these should be in the charge of thoroughly trained women and attached to this section.

As a matter of fact, the sanitation programme is exceedingly difficult and entails an enormous amount of tact, ingenuity and honest work, for its successful execution. It is much easier to shun these difficulties than it is to embrace them. Fortunately for the cause, the rank and file of successful Health workers have attained the vision and are holding high the torch handed them by the pioneers, and real constructive progress is being made.

Sanitation constitutes one of the foundation stones of the whole Public Health Programme. In case of the outbreak of Amoebic Dysentery or Shiga type of Bacillary Dysentery, and the outbreak of Typhoid fever or any other epidemic like Cholera, Smallpox, Plague, Meningitis etc. the importance of sanitation is most appreciated. Public Health workers are convinced beyond doubt that sanitation not only should be included in a modern Public Health Programme, but also should be vigorously stressed at all times by every member of a Public Health Organisation.

If a sanitation programme is to be launched and executed, it should be country-wide. For that reason the National Public Health Department should assume general responsibility. It should set up standards, establish general policies of procedure, and supply regularly to local health departments general advisory or consultation service.

Responsibility for obtaining actual results in improving the sanitary conditions belongs to the local Health Department. In the programme being executed by the local Health Department all of the personnel should participate actively and enthusiastically. Teamwork in the local Health Department is absolutely essential for the successful execution of a sane and sensible sanitation programme.

There may be some Public Health workers in this committee who assume a fatalistic attitude towards a constructive sanitation programme. Occasionally one hears that such a programme cannot be made effective. The assumption of such an attitude by any public worker tends to reflect on the intelligence of the average citizen in our country. It is the firm conviction of the writer that if and when the essential information is presented in the proper manner, worthwhile action can be expected of the people. Let us therefore blame ourselves as Public Health Workers rather than the general public if this programme does not succeed. It has succeeded elsewhere and will succeed here if the Public Health Workers will definitely resolve to make it succeed.

To execute successfully an effective sanitation programme the people should be taught that sanitation is the common sense application of the principles of cleanliness, that cleanliness means freedom from dirt and especially the type likely to make members of the human family ill.

When these facts are presented to the general public in simple language, definite results can be expected. Unless the public is warned by the local Public Health Officials of the relative dangers of unsafe water and milk supplies, improperly protected food-vending establishments and unsafe methods of excreta disposal, how can it be expected that radical changes in matters pertaining to sanitation will be effected?

The duty of the local Health Department is either to acquaint the people with these dangers or to assume responsibility for the morbidity and mortality that will sooner or later follow in their wake. Let us, therefore, as conscientious Public Health Workers resolve to exert our best efforts towards launching and pushing to an effective conclusion a sane and sensible sanitation programme in this country.

It will require an enormous amount of work, a firm determination to succeed in spite of all obstacles, the enthusiasm of a crusader and the spirit of one engaged in a lifesaving enterprise. This is a large undertaking, fraught with many trials and tribulations but worthy of the enthusiastic support of all conscientious Public Health Workers who really desire to be of service to their fellow men.

RURAL HEALTH AND SANITATION

By

SYED FAKHRUDDIN HUSSAIN-KHAN

No programme of a community's health can be complete unlesss it completely covers all those factors in its plan which involve the physical and mental health of the individual as well as that of the community as a whole. Since the individual and the society cannot be separated from their economical, educational, political, socio-religious as well as historical environment, we must not overlook in any plan for their health and well being any of these items which are interlinked with one another and directly or indirectly affect the mind and body of every person. The programme for rural health, hygiene and sanitation has to have an all round outlook, it must cooperate with all social, educational, agricultural, economical and political agencies to achieve success. The plan must be progressive and be able to achieve certain defined steps in a fixed time. Today scientific medicine has proved that within a fixed period we can remove certain diseases entirely from a community, and health and longevity of the community can be definitely improved by reducing mortality particularly amongst women and children, especially due to communicable diseases. No programme can assume full success without the cooperation and support of the community itself. Hence the programme of Socialised Medicine and Health Improvement must be created from within rather than be thrust upon a community from without.

With the above brief introduction the following programme is outlined for the National Planning Committee to institute it either in a village or in a group of villages, or in one or more of the entire provinces of India.

Organisation :—

The success of a programme depends on the organisation and the personnel of the institution. In some communities a democratic type of an organisation would function better, while in others a patriarchal (or dictatorial) system would show more results. In either case it must be seen that the personnel is well trained, enthusiastic and sincere to carry out the plan. If Government and public support is also at the back of the organisation, there is no reason why any fixed programme cannot be carried out.

The Health Organisation should have at its disposal sufficient funds to provide trained personnel capable of rendering an inclusive type of service and one of sufficient intensity to accomplish definite and tangible results.

The basic Health Organisation should be backed by Local and Central Governments. It should cooperate with all the existing organisations. The Health Workers should be integral or coordinated part of one organisation and serve under one Director, who should devote full time to the work.

Best results may be obtained by education, and by creation of group consciousness and not by military and legislative means, though at times these may be necessary also.

Scheme of Organisation:—

Director of
Community Health Programme

Survey and Statistical Records	Medical and Nursing Services	Sanitation & Hygiene Health-Education	Laboratory Clinic

Services :

1. Hygiene and Sanitation.
2. Control of Water, Food and Milk.
3. Control of Communicable Diseases. Hospitals and Dispensaries. Medical Care of the Sick.
4. Maternity Hygiene.
5. Infant, Pre-school and School-Child-Health.
6. Health-Education and Mental Hygiene and Social Service.
7. Rural Field Nursing, Industrial Hygiene and other P. H. Services.
8. Vital Statistics, Surveys and Records.

Rural sanitary districts may be divided, irrespective of political divisions, according to the convenience of transportation and similarity of health problems etc. Each of these districts may be under a Staff of Health Workers who may be provided with all the necessary material to work. It is estimated that at least half to one Rupee per capita per year may be calculated for Health Work.

The Staff and their Wages for Rural Sanitary Districts.

Annual Salaries :	A.	B.	C.
	Rs.	Rs.	Rs.
1 Health Officer	3,600	4,200	4,800
2 Medical Practitioners,	1,200	1,500	1,800
Male and Female	1,200	1,500	1,800
Statistical Clerk	600	750	1,000
Clerk	300	400	600
Midwife	600	750	1,000
2 Nurses (P.H.)	1,200	1,500	1,800
Travel Expenses	2,500	3,000	4,000
Contingencies	800	1,000	1,500
Total	12,000	14,600	18,300

In the opinion of the author no one person or organisation can remove all the ills of our people or improve them unless all the organisations would join hands to help one another. In some villages we may have to make use of one person, for example a school teacher who would have to be a banker and an economist and agriculturist, a sociologist, a politician, a **health worker** and what not, besides his being a professional educator.

In the field of health there are many wide apart duties and responsibilities. It is impossible to cover all the necessary functions efficiently by one man; still, if the right man is selected or elected for this work and given a thorough training in the field of Hygiene and Sanitation and all the necessary material aid is given to him, it would be quite possible to do the needful in a fixed time.

Herein is given in brief a scheme for "Village Improvements" and a graphic illustration of the community "Survey" made in order to plan a definite programme for the Health, Hygiene and Sanitation of our rural and urban areas.

In this scheme the author has purposely omitted the list of equipment and its cost, because it will vary according to local conditions and needs of the community, as well as the size of a "Sanitary District". A population unit of at least 20,000 people is considered necessary for an average district. The greater the population and area of the district, the greater will be the cost of administration and the Health Services.

It is suggested, that the local Qualified Practitioners (Hakims, Vaids and Doctors)—Ha. Va. Do. may become the keystone in providing a preventive and general medical service to the family as a unit with reasonable and assured compensation from Schemes of Sickness and Social Insurances. Thus all public medical health work may be done through the organised clinics and salaried "Ha. Va. Do." Physicians rather than practitioners' offices and fees for services. The Health Insurance schemes have proved cheaper and more useful than State and charitable medical institutions.

Village Improvements

Sanitation:—

Streets. Street watering, sweeping.

Frontage and back of Houses draining and keeping clean.

Removal of House pests, Rats and Animal Parasites, House and Animal Wastes.

Draining of Swamps.

Latrines. Scientifically constructed, trench type of septic tank type. (E. G. Portable types 'Japan', 'Texas' etc.)

Defecation in lanes, streets, fields and in bushes should be forbidden and soil pollution stopped.

House cess-pools and gutters made 'pakka', also animal barns, and all wastes scientifically treated and used for manure.

Manure pits constructed 'pakka' and covered daily with dry soil or ashes.

Smoke Nuisance. Burning of Animal Dung forbidden. Manure scientifically prepared and increased by adding organic wastes.

Burning of leaves, grass and wood curtailed and people taught to use coal and oil instead, or plant fuel trees.

Drinking Wells. Closing of Wells and putting on Pumps. Cleaning the bottom of the wells. Repairing wells in and outside, removing trees nearby. Drainage around Wells to be made 'pakka.' Convert Step wells into Draw wells, if nothing better can be done.

Forbidding Bathing and Washing in Wells. Separate arrangements may be made away from wells

Separate Animal Drinking far away from Drinking water wells.
Analysing Well water chemically and bacteriologically as often as possible, at least once a year, particularly after rains.
Adding of Pot-Permanganate or other disinfectants, where and when indicated by the analyses.
Wells near tanks, ('Talao'), Cess-pools etc. closed or made use of for other than drinking purposes Or filtering of such well water by sand filters before use.
Increase and improve domestic water Supply.
'Bore Wells and put Pumps with sanitary foundations and fittings.
More wells and large 'Pakka' tanks for more water supply and storage.
Separate Tanks for washing, bathing and animals.
Special disinfecting Bath pools for Animals.
Swimming pools designed, constructed and regulated.

Stream Sanitation—Rivers, Canals, Lakes etc. Where ever Drinking water is taken from rivers, canals or lakes, there water filters should be provided. Special enclosures made at these places whence water is drawn.
Pollution of these waters, particularly at these places prohibited.
Burning Ghats and their sanitation controlled.

Preventive Measures :—

Immunisation, Vaccination against Smallpox and other communicable diseases where found.

Epidemic Control. Typhoid, Cholera, Malaria, Guinea worm, Hook worm, T.B., Dysentry and diseases of the Cattle. Insects, Mosquitoes, Rats and Vermin control.

Quarantine. Laws rigidly followed both for men and animals.

Prevention of Non-communicable diseases, e.g. defects due to health habits. Diabetes. Cardio-vascular troubles. Deficiency diseases. Nutritional derangements. Nervous and mental disorders. Health hazards and accidents. Industrial hygiene. Examination of Workers and Farmers.

Food and Milk Hygiene. Adulteration of Food and Milk Control. T.B.—Test of all milch cows. Pasteurisation. Control of dairy, bakery, sweet manufacturers. Hygienic production, handling, packing and shipping of grains, vegetables and fruits etc.

Fly Control. Fly Control at Sweet shops, Hotels and 'Gur' and Sugar manufacturing places.

Vital Statistics accurately taken and maintained for statistics and research.

Drug and Narcotic Control. Control of Alcoholism. Forbidding the use of alcohol and tobacco amongst women and children.

Village Planning:—through the cooperation of Agricultural (Ag.), Engineering (Eng.), Educational, Ed., Economical (Ec.), Political (Pol.), Public Health (P.H.), and Social organisations (So.).

Ag.	Eng.	Ed.	Ec.	Pol.	PH.	So.	
							STREETS
	*						Streets widened, straightened, tarred and paved, connected with Highways. Building of Bridges.
*	*						Shady Trees on all streets and roads planted.
*	*						Gardens and Playgrounds laid.
*							Forests, Orchards, Nurseries, Fruit-and Vegetable gardens developed.
*							Fodder, Fuel and Shade trees planted.
							HOUSING
	*			*	*		Housing restrictions drawn from sanitary and hygienic point of view. As for example, height of foundation, ventilation, light, fire-hazard, smoke, drainage, distance of animal houses, fowls, shops and graneries, manure pits etc.
		*		*		*	Schools, Library, Social Centres, Hospital and Health Centres constructed.
	*			*			Bazars, Factories, Machine Work Shops designed and separated.
				*		*	Exhibitions, Sports and Clubs organised.
			*				Co-operative Banking, Storing and Sales instituted.
	*						Insect proof Graneries (silos) and storage houses built.
					*		Farm-Products hygienically produced, finished and shipped.
						*	Mobile Fumigation service freely given.
							CATTLES
							Cattle Breeding improved.
							Cattle Feed improved.
							Cattle Shed constructed.
							Cattle tested and treated for communicable diseases.
							EMERGENCIES
							Flood, Famine, Fire, Draught, Locusts, Storm and War etc. relief given and plans laid down to meet such situations.

Survey:

No definite programme can successfully be made without a thorough survey of the local conditions. This survey must include all the necessary data needed for future planning and expansion.

For the general health of a community is dependent on the topography, soil formation, productivity, industry, water supply, drainage, population (man and cattle), weather conditions, education and economical or cultural backgrounds of a community. Therefore the survey must include all these items.

Besides the survey of the society and its surroundings one must possess intimate knowledge of the individual's mental and physical health. This makes it imperative to make study of not only each family, but every individual.

This survey must be done on card system by school teachers who may be provided with questionnaire; and they may not only survey once and be done with them, but keep them uptodate by checking and rechecking on them for many years. Students have proved useful in gathering information of this kind of survey work.

This survey will give us information of the success or failure of a programme, therefore though monotonous, dry and statistical in outlook, it has to be carried out with scientific precision.

VILLAGE SURVEY

A. Name:———————— District:———————— Province:————————

Bounded by village in North————————————————

South————————————————

East ————————————————

West ————————————————

General Topography:

Desert
Mountains
Swamps
Flat Lands
Undulating Hills

....

Quality of Soil:

Black
Yellow
Red
Rocky
Alluvial

....

Analysis of Soil:

When:

		Acres	Bgihas	Guthas
B. Area (total)				
Land under cultivation	————	"	"	"
for pasture	————	"	"	"
for garden and vegetable	————	"	"	"
for orchards	————	"	"	"
village ground: houses, shops, factories, etc.	————	"	"	"
under roads, tanks, kiln, cemetry etc.	————	"	"	"
barren	————	"	"	"
under forests	————	"	"	"
for playgrounds	————	"	"	"

C. Sources of Water Supply:

Lake———— River———— Canal———— Wells————

for drinking purpose———— for cultivation———— for gardens,————

Average annual rainfall———— inches.

Wells, total No.———— for drinking, katcha———— pakka————

for land: hand pump————motor pump

———— 1 Kos———— 2 Kos———— more

Kos———— step well————bored————

electric motor————————

Condition of Wells: In good repair————————

need repair————————

Quality of drinking water. Potable————————

colour————————

odor————————

taste————————

When analysed? Analysis:————————————

————————————

Quantity of drinking water:————————————

Plenty, scanty, dries in summer.

Drainage:

Rainwater drains into the————tank ———— river ————rivulet

Wells „ ———— „ ———— „ ———— „

fields————————, streets————————, pools————————

absorbed by soil————————————————

pakka drains———————— katcha drains————————

pakka roads———————— katcha roads————————

Household water: collects into the streets————————

katcha pits———————— pakka pits————————

C. Sources of Water supply (continued).

Sewage:

Number of 'pakka' Latrines, private————, public————

" " 'katcha' " private————, public————

" " septic tanks————

Sewage flows into tank———— river———— farm,———— cess-pool————

Pail system refuse collected————, dumped in heap———— in pits, covered————not covered———— burnt in open fire————, incinerator————

Sewage treatment plant————,

Manure scientifically manufactured————,

Garbage:

collected————, fed to hogs————, burnt ————, made into manure————,

Garbage by-products————

D. Population.

Occupations:	Total	Male	Female	under 5 yrs.		betw. 5-16	
				M.	F.	M.	F.
Landowners							
Farmers							
Trade							
Industry							
Farm							
Labourers							
Factory							
Unemployed							
Professional							
Priest							
Physician							
Teacher							

E. Kind of Produce :

Grains and Dals:	Appr.		Appr.		Import		Export	
	Acres	Mds.	Value	Mds.	Value	Mds.	Value	Mds.
Rice								
Wheat								
Corn								
Fruits:								
Vegetables:								
Others:								

F. Kinds of Trade :

Minerals and Raw materials	Total	Export		Import	
	Mds.	Mds.	Value	Mds.	Value
Industrial Products					
Machinery					
Oil seeds					
Cotton					
Hay for Fodder					
Medical Herbs					
Drug plants					

G. Dairy Products.

	Total	Export		Import	
	Mds.	Mds.	Value	Mds.	Value
Cow's milk					
Buffalo's milk					
Goat's milk					
Separated Milk					
Curd					
Butter					
Cheese					
Ghee					
——— ———					
——— ———					
Eggs					

Animals.

	Total	He	She	Appr. Value Rs.	Excretae Mds	Manure	Used for Fuel	Wasted
Buffalos								
Cows								
Veals								
Goats								
Lambs								
Horses								
Donkeys								
Pigs								
Dogs								
Chicken								
Geese								
Ducks								
———								
———								
———								

H Animal Fodder.	Protected from						
	Fire	Rain	Insects	Mice	Washed ?	Cleaned ?	Threshed Corn
Grain							
Grass							
Hay							
______							
______							
______							

Animal Sheds.	None	Tin	Straw	Tile	Mud	Grassbeds	Space occupied in Sq. Ft. or Yds.
for Buffalos							
„ Cows							
„ ______							
„ ______							
„ ______							
„ ______							
„ ______							
„ ______							
„ ______							
„ ______							
„ ______							
______							

I. Tree Survey.

	Total No.	in Village	on Roads	on Farms	Proposals for Five Yr. Plan
Fruit trees:					
Shade trees:					
Fuel trees:					
Hedges (in Yards)					

J. Housing

	Total No.	Appr value of each:
Separate Homes		
Shops		
Storage		
Factories		
Hospitals		
School		
Church		
________		
________		

Construction of dwellings: Foundation________________________

Walls ________________________

Roofs ________________________

Floors ________________________

No. of persons per residential rooms

K. Family Survey.

Village———————— District————————

Head of Family———————— Serial No.

Names:	Rel.	Caste	Race	Sex	Age	Relation	Occupation	Income Rs. p.m., p.a.	Employed
1.————									
2.————									
3.————									
4.————									
5 ————									
6.————									
7.————									
8.————									
Other than Family members:						Connection			
9.————									
10 ————									
11.————									
12.————									

Economic Status: Comfortable————, moderate————, poor————, very poor————.

Total Family Income for past year, Rs.————, Survey of Income————.

Home owned————, or rented————, Value of House and out houses Rs.————

Rent of House and outhouses Rs.————.

No. of stories————, Roof: Tin————, tile————, Mud————, Straw————.

Area of House———— Yds, Front Yard————, Back Yard————, Total area————.

No. of Rooms————, Doors————, Windows————, No. of persons per room————.

Separate kitchen————, Sewer————, Cess-pool, ————, W. C.————, Septic tank————.

Floors: Stone————, Brick————, Cement————, Lepen————.

Ventilation————, Drain pit————, Whitewashing, ————.

Sanitary Condition: General Cleanliness, good————, fair————, Poor————.

Furniture: Well furnished———— Moderately———— Poorly ————, Not————.

No. of Bedsteads————, Chairs.————.

K Family Survey (continued).

	Help (No.) hired	Wages Rs.	Watersupply	
			Kind	Cost
Acres ploughed on Farmland——				
Gardenland ———,				
………… ———,				
………… ———,				

Kind of Produce	Rotation of crops Mds.	Value Rs.	Retained for own use
———			
———			
———			
———			
———			
———			

Animals:	Sex	Age	Value Rs.	Sheds		Drainage	
				with	without	with	without
———							
———							
———							
———							
———							

Carriages: Ox carts———, Carriage———, Cycles———.

Tools: Plough ———, ———, ———, ———, ———, ———.

———, ———, ———, ———, ———, ———.

———, ———, ———, ———, ———, ———.

L. Family's Dietary:

		Cal p. oz	Vitamins A.B C D.	Car	Pro	Fat	Breakfast tolas	Lunch tolas	Supper tolas	Betw. Meals tolas
1. Bread lbs.	Jowar									
	Wheat									
	Bajra									
2. Rice	Khichri									
3. Dal	Moong									
	Chana									
	Arhar									
	Masoor									
4. Vegetable	Green									
	Root									
	Leafy									
	Oil									
5. Products of Milk	Milk									
	Sour M.									
	Curd									
	Ghee									
6. Tea										
7. Sweets	Gur									
	Sugar									
	Honey									
8. Spices										
9. Meat	Lamb									
	Goat									
	Beef									
	Veal									
	Bffl.									
	Pig									
10. Fowl	Chick									
	Geese									
	Ducks									
11. Fish										
12. Eggs										
13. Fruits										

M. Family Health Survey.

Name	Sex	Age	Illness in past 12 Mths.	Duration in days		Treated			Cost of Med Care Rs.	Name of Physician Address
				off work	bed-ridden	Home remedy	Disp. Hosp	Private Ha. Va. Do.		
1.——										
2.——										
3.——										
4.——										
5 ——										
6.——										
7.——										
8.——										
9.——										
10.——										
11.——										
12.——										

Name of Dispensary ____________________

Address of Dispensary ____________________

Name of Hospital ____________________

Address of Hospital ____________________

Reasons for no Medical and Nursing Service:

Morbidity Survey.

A. Communicable Diseases. B. Chronic Diseases. Name of Diseases:	No. of Cases reported in the past yr.	Average No. of days involved per person.	Epidemic? Endemic? Quarantine? Cause traced.
A. Catarrh			
B. Chicken pox			
Cold			
Diptheria			
Dengue Fever			
Encephalitis lethargic			
Influenza			
Malta Fever			
Malaria			
Measles			
Meningitis			
Mumps			
Pellagra			
Poliomyelitis			
Pneumonia			
Scarlet Fever			
Septic Sore Throat			
Syphilis			
Small pox			
T.B. (Resp.)			
T.B. (All forms).			
Typhoid			
Para Typhoid			
Whooping Cough			

	No. of Cases reported in the past yr.	Average No. of days involved per person	Epidemic? Endemic? Quarantine? Cases traced
Name of Diseases:			
Anthrax			
Digestive disorders			
Dysentry			
Diarrhoea			
Eye infections			
Ophthalmia neonstrum			
Gonorrhoea			
Rabies (men)			
Rabies (animal)			
Skin diseases			
Scabies			
Spotted Fever			
Tularemia			
Undulent Fever			

Vital Statistics.	Total No.	Rate
Live births:		
Still births:		
Deaths:		
Infant deaths under 1 mo.		
Infant deaths under 1 yr.		
Maternal deaths.		

Individual's Medical History

Name: ―――――― Village: ―――――― District: ――――――

Age:―― Yrs.―― Mos. Date of birth ―――― Place of Birth ――――

Caste ―――――― Religion ―――――― Profession ――――――

Names of members of family having: Pulmonary T. B ――――――

Leprosy――――――

Cancer――――――

Diabetes――――――

Nephritis ――――――

Epilepsy――――――

Insanity――――――

Heart Disease――――――

Apoplexy――――――

etc.――――――

Give Name, age, Cause of Death of:

Father, ――――――

Mother, ――――――

Brother, ――――――

" ――――――

" ――――――

" ――――――

Sister, ――――――

" ――――――

" ――――――

Have you had: (give date or age when had, and **how** long lasted)

	date or age	how long?
Asthma		
Beri Beri		
Chickenpox		
Chorea		
Chr. Bronc		
Dislocation		
Epilepsy		
Fracture		
German Measles		
Gassed		
Gonorrhoea		
Heart Disease (Vulnular)		
Hay Fever		
Hookworm		
Influenza		
Nephritis		
Malaria		
Mumps		
Mastoiditis		
Meningitis		
Measles		
Nervous breakdown		
Neurasthenia		
Otitis-media		

	Date	how long?
Pneumonia		
Poliomyelitis		
Pleurisy		
Rheumatism		
Rickets		
Smallpox		
Scarlet Fever		
Syphilis		
Typhoid (Para A.B)		
Tonsilitis		
T. B.		
Whooping Cough		
Wounds		

Do the effects of above illness persist?

If so, what? ____________________

____

____

Have you been vaccinated?

Date or Age ____________________

against Typhoid, ____________________

„ Smallpox ____________________

or ____________________

What Operations have you had?

Adenoids
Appendix
Bullet
Circumcision
Cataract
Foreign body
Hernia
Hydrocile
Mastoid
Nasal
Piles
Tonsils
Ulcers
....
....

Have you had Injury with loss of conciousness?
Nature of injury:
Date of age:

Did you have any of the following last year?

	Month	How long?
Indigestion		
Constipation		
Headache		
Backache		
Nervousness		
Fainting		
Dizziness		
Coughs		
Expectoration		
Spitting of Blood		
Nausea		
Vomitting		
Palpitation		
Deafness		
Night Sweats		

	Month	How long?
Poor Appetite		
Diarrhoea		
Nosebleeds		
Hoarseness		
Chills or Fevers		
Shortness of Breath		
Swelling of Feet		
„ of Ankles		
Jaundice		
Sleeplessness		
Frequent Urination (nights)		
Discharging Ear		
Piles		
Poor vision		
Speech defect		
Painful feet		
Fits		
Convulsions		

How often did you suffer from colds last year?

Nose closed Nose flowing

Throat Lungs

Do you use Tobacco? Form:——Amount per day——

„ Tea or Coffee? ———Cups per day———

How often do you bathe? Summer——— Winter ———
Hot water———cold water———
fixed time———in open air———

How often do you brush your teeth?———With Brush———
with dentifrice—— Miswak ——
without „ —— Finger ——

Do your Gums bleed easily?

Did you go to Dentist last year———How often?———Why?———

How much time do you spend at a meal?

Are meals regular?

Do you chew your food well?

Do your bowels move regularly once a day? Constipated?———
Regular time:———

What exercise do you take besides your routine work?
One hour per day————2 hrs. per week————
Walking: ———— Vigorous walking:————

Does your daily work require:

	Much	Medium	Light
Physical strain			
Mental strain			
Nervous strain			

Hours of Work per day:——————Night:———— ————

Do you sleep well? Hours per Night———in closed room———

„ „ Day————in open room————

„ „ Day————in crowded room————

What amusement do you take?—————How often?—————

Hours a day——————Days a week——————

Are you fond of any Hobby?——————What?——————

For pleasure?——————For profit?——————

Are you dependent?——————Self supporting?——————

Physical Examination by Physician

Name: Address:
Age: Profession:
Caste: Religion:

Weight: Height:
Maturity: Development: Nourishment:
10% under normal
10% over „

Posture: Stoop neck, round hollow back, drop shoulder.

Skin: Scars: Acute or chronic
Hair: Scalp: Mucous membranes:

Eyes:
Vision R. L.
20|24 or less and not corrected by glasses
20|13 or more „ „ „ „
Astigmatism R. L.
Corrected R. L.
Colour Vision
Ocular Movements Sclera
Exophthalmos Pupibls Size
Eyelids Conjunctina

Ears:
Discharge (not under treatment)
Tympanum Cerumen (Impacted, plugging entire canal)
Hearing: R. L.

Nose:
Obstruction Discharge
Sinuses (chronic infection)

Teeth:

Caries Dead Misplaced

Notched incisors Uncorrected, abcessed, tartar, Pyorrhea

Tonsils:

Large, Small Prominent, Buried, Removed, remnants

Infected chronic acute

Pharynx:

Neck:

Thyroid Pulsations

Chest: Shape Movements

Measurements: Inspir Exspir Exspan

Lungs: Pelpation Percussion
Ansculation

Heart: Apex beat (1) chor (2) Location
Thrill Murmurs

Functional test Area of Dullness

Pulse: Rate Rhythm

Blood Pressure: (recumbant) Syst. Dyst.

Spine: Organic Functional

Abdomen: Hernia Hemorrhoids
Genitals Foreskin
Tests Varicocele Hydrocele
Lymph nodes Ceru Ac Ing

Nervous system: Speech defect Tremor
Coordination Knee jerks

Upper extremity Lower extremity

Varicose veins Feet

Urinalysis Stools

Bathing habit: Less than twice a week?

Eating habit:	Indigestion Irregular time	Hurried meals Improper Diet
Evacuation Habit:	Constipated	Regular time Once a day
Exercise habit:	One hour a day walking	two hrs. a week vigorous
Sleep :		

A Search for Contagious diseases and Carriers may be carried out thus:

Village..........District.. .... .Doctor..........

Name	Age	Occup.	Diseases	Year	How long?	Carrier?	Tested?

Typhoid, Malaria, Hookworm, Tuberculosis, Syphilis and other diseases must be noted. Carriers or suspects should be discovered and the danger of spreading the contagion curtailed. Those handling milk and other articles of food should be given tests and quarantined to safeguard the milk supply and food handling. This is better than wholesale immunisation.

The same way animal health survey must also be made and diseases like:—

	Examined No. of cattle	Tests given	Immunized
Hoof & mouth disease			
B. Abortus			
Tuberculosis, etc.			

must be noted and tests given.

School Attendance and Health Record.

Teacher Mr...... Class.................
School Nr........ From Dt...........Mo............19
Village........... To Dt...........Mo............19

No. of pupil	Present		Abent		with fever		
on roll	total	%	total	%	Resp. dis.	Dig. dis.	other illn.
— 1							
— 2							
— 3							
— 4							
— 5							
— 6							
— 7							
— 8							
— 9							
10							
— 11							
— 12							
— 13							
— 14							
— 15							
— 16							
— 17							
— 18							
— 19							
— 20							
— 21							
— 22							

Rate per 100 pupils: —

Population Survey.

Vilage............District.............Date............

Age	Total Nr.	% of Pop.	M.	F.	Internat. Statistics	M.	F.	Total Nr.
0 - 1 mo.					0 - 1 m.			
2 - 6 „					2 - 6 „			
7-12 „					7-12 „			
13m-2 yrs.					13m-2 yrs.			
3 - 5 „					3 - 5 „			
6-10 „					6 - 9 „			
11-15 „					10-19 „			
16-20 „					20-29 „			
21-25 „					30-39 „			
26-30 „					40-49 „			
31-35 „					50-59 „			
36-40 „					60-69 „			
41-45 „					70-79 „			
46-50 „					80-89 „			
51-60 „					90-99 „			
61-70 „					50 or more			
71-80 „								
81-90 „								
91-100 „								
over								

Vilage... ... .District. ... . Date............

Causes of infant (under 12 months age) deaths. Year........

	M.	F.	Total	% of total death
1. Still births				
2. Premature births				
3. Pneumonia & Bronchi				
4. Congenital heart				
5. Diarrhoea & Enteritis				
6. Congenital debility				
7. Diseases peculiar to infancy				
8. Birth injuries				
9. Influenza				
10. Congenital malformation				
11. Gastritis				
12. Accidents				
13. Convulsions				
14. Tuberculosis				
15.				
16.				
17.				
18.				
19.				
20. Miscellaneous causes				

APPENDIX IV

A Note on the investigation into the Volume and Causes of Infant mortality as well as mortality among women and suggestions of ways and means of reducing such mortality.

by

LAKSHMIBAI RAJWADE

In his report for 1936, the Public Health Commissioner with the Government of India observes: "Maternity and Child Welfare being a basic health service might well be thought to have a primary claim on public funds, but unfortunately the aims and objects of the movement are somewhat imperfectly understood and the potential benefits to the health of the community are not sufficiently appreciated. In consequence, the expenditure of public funds on maternity and child welfare is still very limited. Public opinion in this connection is a plant of very slow growth and, in the interests of the nation, the question whether expenditure of public moneys on maternity and child welfare should not be made obligatory is one which at least deserves consideration". The restraint with which the Health Commissioner puts the case obscures the relation in which the problem of maternal and infant mortality stands to the whole life and future of this country. It is true that to a certain extent it is a problem of health and preventable disease. But there is another perspective which affords a truer guide to long range planning. It is given by Prof. Gyanchand's words, ".........if we take it for granted that our birth and death rates are in the neighbourhood of 48 and 33 per mille respectively, the position of our country becomes still more conspicuous as a land in which the interplay of life and death secures an increase of population at a tremendous cost in human-suffering". When we further realise that to keep up this interplay of life and death about 20 mothers have to starve or poison themselves to death for each thousand of births; that out of the thousand children born at such awful cost nearly 175 to 200 (the actuarial figure for 1921-31 is 241) die before they are a year old; that on the scarred survivors of this stupendous ordeal is laid the responsibility of reproducing and building up their race in this land—when we look at the problem in this way, surely we can no longer remain content with the half hearted and largely ineffective course which we have so far pursued in this country.

It is true that other countries have their maternal and infant mortality problems. But with a few exceptions the problem in those countries is not comparable in extent and social consequence to the problem in India. For instance in 1936 in England and Wales the maternal and infantile mortality figures were only one-fifth and two-fifths respectively of the corresponding figures for India. And even those figures are considered rather high in England where maternity and child welfare work is much better organised and effective than in India.

There is another factor involved in the problem. That is the refusal of changing India to consider motherhood as high and vital a function at least as (and of course really much higher than) ruling the country or teaching or building or inventing. In stark actual fact it is the most vital function in organic life, whether human or sub-human and must in justice be the first charge on the nation's interest and resources. For any long range and realistic planning, therefore these facts have to be basically realised. Although the general obtuseness of the public regarding this stupendous and vital task continues to stand in the way of reform, yet lately there has been a welcome awakening among the intelligentsia to the necessity for planning in a well coordinated manner and on a comprehensive scale for the total reconstruction of life in this country. Russia, where the need for planning was first practically realised, claims that it has reduced its maternal and infant mortality figures by 30% during the last 10-15 years of planned protection of motherhood and childhood. The intellectual background for initiating a similar effort here has now come into being and is gradually extending. And it is therefore no longer necessary to repeat in this note a proof of the urgency of planning of a longer range programme for the protection of motherhood and childhood. Planning must if it is to achieve its aim be based on a precise realization of the extent and nature of the social phenomenon concerned, its relation to the rest of the social economy, and the time-scaled scheme of the steps of solution which will exactly fit the problem. The degree of detailed and informed foresight required for planning cannot be provided by one person. A suggestion therefore has to be made and urgently considered that a small group within this committee with co-opted experts should work out the details of a plan, a very rough and bare outline of which is given in the following pages.

II. (a) Maternal Mortality :—

In assessing the extent and nature of maternal and infant mortality in India we come up against the well-known difficulty of not having any kind of exact information. The Government of India Special Committee of 1938 found that Indian vital statistics relating to mothers and infants are perhaps subject to an even wider margin of error than those relating to general population. "The absence of medical certification and the fact that village chaukidars are the agents for registration of vital statistics in rural areas are factors responsible for inaccuracy in mortality statistics at every age period". The "registration of births is known to be more defective than that of deaths and, when the sex ratios at birth for different provinces are compared, it is fairly clear that, in some areas, omission to register female births is much more common than in the case of males." Allowance has, therefore, to be made for such a margin of error in the statistics given in the tables following. (These tables are taken from the Report of the Special Committee of 1938 on Maternity and Child welfare work in India appointed by the Advisory Board of Health).

The table showing the incidence of maternal mortality has obviously suffered from the disadvantage just mentioned about the collection of facts. The Special Committee Report relies mainly on the data collected by three enquiries—one conducted by Sir John Megawa, another by Dr. Neal Edwards more recently in Calcutta, and a third by Dr. Mudaliyar in Madras in 1930-31.

From the table No. I and the data collected from these three inquiries it seems clear according to the Report that "the maternal mortality-rate for this country as a whole is probably somewhere near 20 per 1000 live births as compared with 4.9 per 1000 in England and Wales. From table No. II, it can be seen that the average female human being in India, not only shares, although to a lesser extent than the male in the high rate of infant and child mortality, but has in addition to bear during the years between 15 and 30 i.e., the child bearing years, the brunt of the terrible risk which motherhood in this country involves. This becomes even clearer from the next table No. III (44 in Problem of Population by Gyanchand) in which the percentage of female to male deaths is compared as between several European countries and India and Japan. Very slight increase in the percentage during child bearing years in the case of Germany is an indication of what is possible.

And finally if we put these facts in juxtaposition with the average female expectation of life in India, which is 26.56 years we have a rough idea in terms of figures of the terrible waste and the appalling human suffering involved in the phenomenon we are examining. What it means in terms of damage to the future of the race and of continual loss in national or social efficiency may easily be imagined.

(b) The Causes of Maternal Mortality

Here again information on a comprehensive scale is lacking. But if as did the Special Committee, we go by the very interesting tables No. IV in this note. (No. 3 page 26 of the Special Committee's Report) given by Dr. Neal Edward's enquiry, we find that the commonest causes are puerperal sepsis, anaemia, eclampsia and other toxaemias. The table No. 4 of the above mentioned Report showing a comparison with England and Wales is interesting. It indicates (a) that anaemia as a fatal incident of pregnancy is almost non-existent in England and Wales, whereas it is the second largest factor in maternal mortality in Calcutta, (b) that in Calcutta and presumably in other equally big Indian cities the incidence of the other causes of maternal mortality is practically the same as in countries like England and Wales. This clearly means that whereas Indian city conditions in regard to the care of women during labour and delivery have now attained a fair standard of efficiency, yet the factor which concerns the long range aspects of the protection of motherhood as well as society's responsibility towards it, the factor of proper nutrition and therefore the problem of poverty remains quite beyond our control. Dr. Edwards makes a further comment: "While the maternal mortality rate in India is many times higher than in western countries, the proportion of deaths from sepsis is strikingly similar, and this in spite of the fact that a far larger number of deliveries in this country is attended by untrained women who make no use of modern methods of sepsis and anti-sepsis". Perhaps as her observations are confined to Calcutta and to hospitals this comment might be reserved for the day when we attain a much fuller information about causes of maternal mortality as prevalent in the whole of India. But the observation may be taken to support the fact that the real abnormal factor in our Maternal death rate is the prevalence of the anaemia.

We have so far dealt with maternal mortality. But in addition to the mothers who pay the supreme price for motherhood there are countless others who are denied the solace of death. Many forms of invalidism or even temporary serious disability incidental to pregnancy form the lot of many mothers and if we can use European criteria more than 30 per cent of the Indian mothers according to an estimate in the Special Committee's Report suffer in that way.

(c) Infant-Mortality

The tables following will show the prevalence of this type of mortality. The decrease in infant mortality since 1911 is certainly striking: but the latest i.e. 1936 figure is high enough. And if we take the actuarial figures 1921 to 31 given in table No. V, it is formidable, three times as much as that of England. The decreasing tendency since 1911 and the steady decline since 1918 has been ascribed to (a) the effects of maternity and child welfare movement and propaganda in this country, (b) the slight rise in the standard of living, (c) the continuous improvement according to the public health committee in the registration of births. The welfare movement has not made such headway in the country that it can claim more than a fraction of this improvement as its own work. Nor has the general standard of living risen so appreciably high especially in the rural areas as to make a great deal of difference to the rate of decline in infant mortality. The factor stressed by the Public Health Committee seems to afford the better part of the explanation, (d) the causes of infant mortality are also difficult to ascertain in any precise manner. The Special Committee's Report gives only one table and that too only about Bombay city during 1932-36. The table No. VI shows a remarkably large number of infant deaths due to debility, mal-formation and prematurity and to respiratory diseases. The Special Committee's Report supported by Dr. Christine Thomson's Enquiry points out that the former set of causes relates to pre-natal factors and the latter to adverse environmental conditions.

In fact the root causes of both maternal and infantile child mortality may be divided into two categories—pre-natal conditions and environment. They embrace mal-nutrition in both mothers and children, lack of knowledge and of facilities for pre-natal care, lack of trained midwives, lack of health, maternity and child care, guidance and service, especially in the rural areas, the weight of custom, tradition and religion, the whole complex of Indian marriage, bad sanitation, bad housing, high birth rates, and above all the refusal or the inability of the statutory authorities to see that problem of maternal and infant mortality in its form in India is a major problem in the solution of which the State must assume the most positive possible role and offer the utmost of its resources.

It will not do to say that in so far as the phenomena of maternal and infantile mortality are results of mal-nutrition, bad housing, lack of facilities i.e. of factors which may be grouped under poverty, they will tend to disappear automatically as social planning against poverty takes shape. That argument of course does not suffice because obviously this is a specific problem with specific remedies in addition to the remedies implicit in the raising of the standard of living.

Nor does it mean that the State alone must bear the entire burden of remedying maternal and infant mortality. Hitherto the State has claimed the right only to direct and co-ordinate where maternity and child welfare activity on a large scale has been carried on*. But of its resources and its initiative whether in actual service or in research, the State has given very stingily or not at all. That must change. But at the same time the voluntary local and charitable effort, especially in the finding of means to finance this work should go on ever-increasingly under State aegis. Experience has shown that voluntary and local effort has been ineffective because it tends to lack in resources, drive, permanance and informed guidance—all four of which the State must provide.

---

* Please refer to the Table showing Provincial amounts spent on Public Health, Maternity and Child welfare work in one year.

For planning therefore the following conditions emerge:—

1. A Central Institute attached as a permanent statutory body to the Health Ministry or the Central Advisory Board for the protection of motherhood and childhood.

2. Adequate resources assured to it.

3. Counterparts of the Central body in the provinces under the general direction of the centre but immediately under the Minister of Health, with autonomy and initiative sufficient for driving the work on. Supervision of all agencies of maternity work.

4. Adequate resources from the Provincial budget with perhaps a central grant for the provincial institutes.

Adequate provision for,

(a) The maternity and child welfare services in the form of consultation facilities and training facilities, Maternity homes and hospitals, health visitors, creches, rest homes, sanatoria and museums.
(b) Research (which is also urgently needed).
(c) General direction and supervision by the institute in regard to all legislative, executive or departmental measures relating to mothers and children.
(d) Propaganda.
(e) Educating the mother.

5. Recognition, co-ordination and encouragement of voluntary organizations working on the same line; all voluntary effort, however, to be subject to control and supervision by the Institute.

6. The State i.e. the Institute might have to impose certain uniformities throughout the area under its jurisdiction, as to training of nurses and health visitors, midwives and dais, inspection of maternity services and such other matters as will need to be uniform. It might even be necessary to make part of the maternity service compulsory, like primary education.

Our planning for the future will have to be based on some such bases as those enumerated above. As has already been pointed out there are larger factors such as the general health policy and programme, the problem of poverty, the superstitions and usages of society and others which are beyond the scope of our inquiry. But it is possible and tremendously urgent that we should plan within the four corners of this investigation for the establishment of the most normal and healthful conditions for mother-hood and child-hood.

Recommendations

The need for a central statutory body. This great social cause has not made much headway in India chiefly because there has been no recognition so far of its fundamental importance and urgency. The total effort being mainly voluntary and local so far has had behind it neither the resources nor the authority nor the co-ordination, unity and drive which are its due. To say, as the Report of the Director of Public Health, Bengal for 1937 does, that "The maternity and child welfare work is mainly a responsibility of the local bodies...." (and that too in a report which records a slight rise in the mortality figures, 253.7 per mille for infant mortality and 24.4 for maternal mortality in Calcutta) is wholly to miss the primary place of this work in Indian reconstruction, and to misconceive the nature of the agency and the organization which will have to undertake the work. All our population figures show that the hand of death lies heavy on us and that the span that life allows us is all too brief. How can a dying race undertake or even whip up enthusiasm for economic or social reconstructions, in any sufficient measure to carry those tasks through? All our planning will be based on treacherous ends if we do not plan first for strengthening the bases of vitality in the race. Indeed, there is not much hope for the future of this nation if our planning does not start with the assumption that our race needs a fresh start biologically.

Thus stated, the necessity for a permanent central body for the protection of motherhood and childhood under the Ministry of Health and entitled, not only to a major portion of the resources of that Ministry, but also to a reasonably large percentage of the central budget becomes clear. As far as one can see Public Health will always be a provincial subject; but in the case of the problem of motherhood and childhood co-ordination, research on a national scale, planning, general supervision and financial assistance will necessarily have to be the function of a central institute or department. A director or directress assisted by a committee of experts chosen mainly to represent the provinces will be in charge. He or she will be responsible to the Minister of course; but will be invested with large powers and authority for the purpose of making the work effective. The work will be divided roughly into the following sections:—(a) research and the keeping of uptodate statistical records, (b) planning, (c) propaganda, (d) training of maternity and child welfare personnel, and (e) financial assistance to the provinces. It will be seen that while the actual provision of maternity and child welfare centres and services is left to the provinces, those aspects in which co-ordination and uniformity are essential have been made a central concern.

Every province will have its own department or Institute for the protection of motherhood and childhood. This body and its directress or director will be responsible to the Minister for public health and will have its own special service. In so far as it will receive from the central revenues some financial assistance it will be subject to general supervision from the Centre. But the provincial initiative in regard to the provision of maternity and child welfare centres and schemes and services will be unfettered. It will also have to provide for the training of its provincial personnel in addition to the training provision made by the Central Institute; although for co-ordination and uniformity the general scheme of training will be centrally evolved. Incidental research in local condition will also have to be carried on: but such research may be subsidised by the centre—considering the fact that provincial resources will usually be scanty (at least for a number of years to come) and will be already over burdened with demands from the other reconstructive departments. The whole question of resources is dealt with in another section of this note.

But it must be clearly understood that the provincial institute will be the sole authortiy in any given province for all maternity and child welfare work going on in that province. It will not only initiate its own centres and services; it will have the right to guide and to inspect and to control all local and voluntary work in the subject. It will have the authority to frame rules in execution of this responsibility. It will be necessary to empower it to frame rules requiring the compliance not merely of voluntary bodies, but of private individuals also, in certain uniformities of conduct, such as the registration of expectant mothers, attendance of children at clinics, etc.

Secondly, the institute will have the right to be consulted in regard to any legislative, executive or departmental measures affecting the problem of the protection of motherhood and childhood, housing, sanitation and hygiene, social reform measures, nutrition, women's disabilities measures, health or social insurance, nursery and kindergarten, education and adult education; general health problems, legislation re: rural or industrial occupations, and a host of other allied subjects come under this category and the institute will have a voice in the shaping of them.

Finally we come to the actual work of the provincial Institute for the Protection of Motherhood and Childhood.

It will survey the province with a view to find out the incidence of maternal and infant mortality in relation to locality, caste, race or class: the same survey will attempt as exact an assessment as possible of the causes of deaths. Finally, an up-to-date chart of the existing facilities for maternity and child welfare will always be ready. It will constantly devise ways and means to make this survey as precise and true as possible. (In fact, if within a period of fifteen years the provincial maternity and child welfare services extend according to the plan here foreshadowed, this survey ought to be at the end of that period as precise and complete as anywhere in the world). In addition to actual mortality and its causes, the survey ought also to include as a necessary counterpart an estimate of the available resources and equipment in the province including in this, voluntary funds, available medical aid, etc.

Based on this survey of the province a programme will then be devised of completing by certain stages the provision of maternity and child welfare services. This really ought to form part of a larger health plan "which will ensure the medical supervision in a discreet and unobtrusive way of every human being in the province from the moment of conception to the moment of death." But whether such a health plan comes into operation or not, the plan regarding the protection of motherhood and childhood should not be made dependent upon the former if there is any uncertainty in the matter. For, obviously the protection of mother and child is more urgent and much more vital than the other aspects of public health. After all normal adults can and ought to look after themselves during normal times without too much assistance from the State. Motherhood and childhood are very largely helpless and dependent conditions, and are fundamental to the future of the race, and for their protection the State has therefore to step in. In discussing schemes for a National Maternity Service for England and Wales, a Departmental Committee's Report said, 'provided medical ante natal and post natal supervision is secured, attendance on normal cases should be the function of the midwife and with certain important exceptions, institutional provision should be mainly for abnormal cases.' This basis for a provincial maternity service in India may at first-sight seem adequate especially in view of the fact that in England and Wales in 1935 midwives attending 65538 maternity cases obtained a death rate of 2.5 per thousand. But in this country we have neither a sufficient number of, nor sufficiently trained midwives available. And therefore although the broad basis will be more or less the same as that set forth above, the practice in India will have to include a Doctor's attendance or a maternity home even during the confinement as far as possible. The intensive training of dais and midwives is part of the plan: but until the number has increased and the training has become effective, domiciliary midwifery in India will involve most of the risks which cause the enormous death rate. Therefore, as far as possible mothers should be encouraged to go to maternity homes provided by the State.

The specific number of these maternity homes for a province cannot be laid down in this plan as the number will naturally vary. Within the province itself the number will depend on the locality to be served. For instance in the Province of Bombay it has been estimated that in Bombay city 73% of all confinements take place in maternity institutions. And that number is bound to increase for some time. Table No. VII gives a basis for the provision of maternity beds in urban and rural areas if we accept the very moderate calculation that 1 bed per hundred births in urban areas and a little less in rural areas is necessary.

But the latter calculation applies to Western requirements, where domiciliary midwifery is satisfactory and general. In India that type of service is so inefficient and inadequate that an estimate of only 30% of all confinements requiring institutional accommodation is certainly much below the requirements of the Indian situation.

The birthrate in India is 35 per thousand Even if we suppose that it is 48, as Professor Gyanchand in his book on "India's Teeming Millions" says after calculating the possible error; and if we suppose that it will be necessary for almost all these confinements to take place in an institution, it will mean that we have to provide for two maternity beds per thousand of population on the basis that one bed can during the year accommodate from 30 to 36 confinements. But the Special Committee's Report assumed that only about 30-40 per cent of all confinements will or should take place in maternity institutions, which will mean 1 bed per two thousand of population.

Whichever estimate represents the true needs of the country, according to the Special Committee's Report I maternity bed per two thousand or in other words I bed per hundred births—is the minimum for which provision ought to be made. Table No. XV of the Special Committee's Report shows that many urban areas more than satisfy these minimum needs—although the rural areas fall far short of them.

But actually many more than 30% of confinements ought to take place in an institution. Bad housing conditions, very low resistance, lack of equipment, inefficient midwives, interference by superstition, usage and ignorance and abnormalities, make it imperative that more than 70-80 percent of all births ought to have the benefit of institutional care during confinement. It is therefor the clear duty of the State, if its protection of motherhoood is to have any meaning in this country, to make provision normally for 2 maternity beds for each thousand of population or that roughly every village of 500 souls ought to have its own maternity centre.

But as that would probably mean in equipment, buildings and staff a burden too great for provincial resources to bear, one centre with two maternity beds catering for a group of 3-4 adjacent villages making up an approximate total of one thousand souls seems to be a more practicable arrangement to aim at. Provincial adjustments, will however have to be made. This goal might be reached through one or two intervening stages over a period of 10-20 years, in which first there will be a centre for each 5,000 of population with at least 4 beds, then a centre for each 2,500 with 3 beds and finally one full centre for a thousand of population with two beds.

That is a general basis useful for computing on the National or provincial scales the cost and the extent of maternity and child welfare provision. But the actual organization and distribution will have to be divided broadly under the two categories of urban and rural. The scale of the organization and the nature of the service will be different in each of these two categories. The concentrated population, their mobile attitude to progress and their better environment in the towns are in striking contrast with the scattered population, their apathy and the hopelessly anachronistic environment of the rural areas.

Urban Organisation.

In cities and towns and small townships with over 5,000 inhabitants the maternity and child welfare service will be organised in units each catering for 5-7 thousand people (with this limit raised to 10-15 thousand per unit in the case of big cities like Bombay and Calcutta.). Each unit, constituted as a unit of the Institute for the Protection of Motherhood and Childhood, will comprise of 2 sections: (1) Maternity Home organised as a section of a health station with a prenatal and postnatal clinic and (2) an Institute Centre to be called Matra Seva Mandir. Both the sections will be organised, staffed and supervised by the Institute.

So long as the medical profession is not nationalised it will be necessary to make use of the private general practitioners on some such basis as that of Health Stations. A health station will cover an area of a population of from 5,000 to 10 or 15 thousand as the case may be. It will make a complete survey of (1) the economic structure of the region, (2) the industrial and agricultural enterprises, (3) living conditions of the population, (4) the sanitary and hygienic conditions, (5) the morbidity and death rates, (6) the medical facilities available for prevention and cure, (7) the educational facilities for medical workers, (8) the financial resources.

Each station will be staffed by (1) a physician, (2) a surgeon, (3) a dentist, (4) an eye specialist, (5) specialist in gynaecology and maternity and child welfare work, a pathologist and health visitors and other necessary staff.

Every person within the jurisdiction of the health station should be on its register and one general practitioner will look after 5,000 persons. (Details to be worked out.)

This service will have to be financed either by a capitation fee of Rs. 3 per head (or sum to be fixed) per year from health insurance funds or any other source decided upon.

The maternity home will make provision for two beds per thousand of population and will have **three** midwives attached to it who will also be sent out on domiciliary work whenever necessary. It is calculated that on an average one midwife for two beds provides the most efficient arrangement so that a staff of three seems too large. But in view of the fact that the State or the unit will take over the arrangements for domiciliary midwifery and will provide domiciliary service whenever demanded, three is not a large number. And in any case the whole arrangement is to be brought about in two or more stages extending over a period of 10-15 years to allow the people to get used to the unit, to enable a sufficient number of midwives to be trained and to enable the State to find the requisite resources. All these suggestions will of course have to be worked out in detail. They are only made provisionally here.

In fact these considerations apply to the whole plan. The maternity home will have the normal equipment necessary for it, it being of course understood that all abnormal cases will be sent to a maternity hospital. The difference in regard to a maternity case between a hospital and a maternity home will be increasingly emphasised so as to relieve the present congestion in the hospitals in our big cities and thus to reduce the cost to the community of maternity service.

The table No. VII given later on is a partial indication of how completely motherhood and childhood lacks in this country in prenatal and post-natal care. A glance at the table showing the causes of maternal and infant mortality will convince any one of the supreme need for attention to this aspect of motherhood.

This section, which will also be attached to the health centre, will take care of that side of motherhood by means (a) of the registration through health visitors of expectant mothers (b) of examinations before confinement carried out by the doctors and the laboratory attached to the health station, (c) of provision in the case of extremely needy mothers of proper nourishment and in the case of others of instruction in proper nutrition and self care, (d) of examinations of mother and child after the lying in period, (e) of the provision of milk kitchens for mothers who cannot nurse their babies, (f) of day nurseries or creches, (g) of nursery schools and kindergarten and above all, (h) of birth-control; provision of goods, instructions, demonstrations and consultations. The last named is obviously a very important function in view of the fact that the high mortality among mothers and children in this country is in part due to too frequent pregnancies involving a terrific strain on the nerves and on a vitality already abnormally low. Children are born not as a creative evolutionary response to the vital urge, but as brittle standardised products of a tired reproductive machinery automatically set in motion by the sexual act. The reproductive system has to be kept fresh and vitalised to respond creatively and must not therefore be subjected to that strain. That can only be done by controlling pregnancy by contraceptive methods. Much research is needed before contraceptives can be made cheap and safe enough to be used generally but (a) our Institute units will have to play their part in that research effort and (b) they must spread the use of whatever matter and material are available. Day nurseries or creches are not to be looked upon as temporary shelters for children but as training and health centres as well, that is why it is important that these should be in charge of thoroughly trained women and attached to this section.

The second section of the unit will be mainly educative and consultative and will be in charge of a medical woman with an assistant if necessary and health visitors to help. The duties of an urban health visitor will involve as extensive and intimate a contact with the mothers and children and their families as in the rural areas. In addition to the routine general health duties which a health visitor is expected to do; her special job will be to induce expectant mothers to register themselves at the unit (this will be her job at least until the time when such registration will be made compulsory by law) and after confinement to 'follow up' the case for at least two months after which her contact with the family will be confined to regular visit about the health of the family. But the Institute will keep itself in touch with the condition physical as well as economic of mothers and children in their homes. The Institute through its medical staff will carry on its educative, consultative propaganda and research work by holding meetings of mothers, giving instruction in mother-craft, do propaganda, explaining the work of the Institute, in fact cover as much ground of adult education as necessary to bring home to women the need for the application of science to life, the need for realising their rights and disabilities. She will indeed embody the fact that maternity and child welfare work in India is much more educative than remedial and the remedial part belongs in a large measure to comprehensive economic planning, which will ensure a happier distribution of economic reward for the average man and woman so as to enable them to live as human beings, normally fed, clad, housed and educated. But even under present unredeemed conditions a very great deal can be done as we have tried to indicate in this plan to make motherhood and childhood healthier and more truly creative phases of existence. And that great deal consists mostly of the dispelling of ignorance and superstition, of authoritative guidance and persuasion and of sympathetic help. That is the role of the doctors in charge and the health visitor in this great work. It will also appropriately enough be their part to collect data of every kind connected with motherhood and childhood and tabulate it. That will help ultimately not only in making their own store of know- [illegible] and more precise but in helping in the most urgently needed general research in this subject.

And also in spreading that knowledge this section of the Institute will have at hand such powerful agents as the Press, the Cinema and the Radio, all of which will have to be pressed into the service of this cause: posters, pamphlets or films prepared by the Central Institute for nation-wide circulation will be as fully used as possible. (The health visitor can call upon any of the members of the unit for help in propaganda or education).

Rural Organisation.

It has already been pointed out that rural conditions are very much different from urban and will require a different kind of organization.

As it will be impossible to finance and staff full separate units for small communities like our villages it will be necessary to organize the maternity service in rural areas in two complementary sections (1) provision for two maternity beds in charge of a midwife-health visitor for every thousand souls or for a group of 3-5 adjacent villages with a total population roughly of 1000-2000. (2) a travelling health unit.

Village groups must be so organised that the transport difficulty is eliminated and the midwife-health visitor can keep in easy contact with the whole of her jurisdiction. The maternity centre should have the usual equipment of such a centre for normal cases, all abnormal cases being sent to the nearest hospital. Pre-natal and post-natal care will mainly be given by the health visitor mid-wife; but the travelling unit should do all the pre-natal and post-natal examinations and treatment. If, as of course is usual, the travelling unit keeps to a schedule, the midwife-health visitor at each village centre can plan consultations, examinations, demonstrations etc. a fortnight or week ahead, and get as many women to attend as possible. If however for some reason in certain cases the travelling units' help is not available these duties will devolve naturally on the health-visitor-midwife.

The health-visitor-midwife when she is not actually engaged in midwifery can do health visiting for the Institute. The rural health visitor has in India, to develop a much more intimate contact with the families in her jurisdiction than the urban health visitor. She has not only to win confidence—a common condition of all successful village work—but she has also to know the family in as real a sense of the word as her grasp and love of her job demands. The economic condition, the health histories, the needs and aspirations, the usual activities of each member of the family must be known as far as possible to the health visitor and they must get into the habit of confiding their health problems in her. Her severest test in the village communities will be the degree to which she wins her battles against superstition and custom—the degree to which she wins her charges over to the side of science and rationalism. She will need vast patience and sympathy—with very little to compensate her for all the great work she will be doing.

She might even assume a larger role. It is often said that the whole problem of Maternal and Infant mortality is a simple problem of nutrition. People vaguely say "give the mothers and the children well-balanced and enough food and there will be no maternal and infant mortality to speak of". Dr. Ackroyd estimates that well balanced and enough food for an adult in India costs from Rs. 5 to Rs. 6 per month. The average family in India consists of five persons—father, mother and three children and to feed the family properly an income of Rs. 20-25 must be assured for every family, whereas the actual family income comes to about 7 to 10 rupees per month. There, it is said, you have the complete explanation of tables relating to the figures and the causes of maternal and infant mortality. Of course our plan assumes that, that is only a partial explanation. We have to plan for the removal of all preventable risks involved in motherhood and childhood and organise a national or provincial service towards that end. That is an immediate and weighty task for which the present plan is intended to provide a working basis. But the other more fundamental task of nutrition or in other words of poverty may also be touched upon: for, the Health Visitor, if she succeeds in being a sort of repository of the health conscience of the village group may turn her attention to the problem of nutrition and better incomes in so far as she can do that within the village context itself. She can at least see or accept the cooperation of other village workers in this matter and thus make her own work much more significant than it would be otherwise.

Travelling Health Units.

(1) A travelling health unit will consist of a doctor with a general degree but trained for travelling health unit work (having taken a special course at a Training Institute comprising of special instructions in eye, ear, nose, throat, dentistry, gynaecology and maternity work, children's diseases, village hygiene and sanitation, nutrition etc); (2) a woman doctor or nurse also trained for this special work and a compounder trained for elementary research work (collection of data, etc.). The equipment will consist of two buses, one for purely transport and residential purposes, the other fitted up as a laboratory for every day work and dispensary etc. The unit will pay fortnightly or three weekly or weekly (as may be found convenient) visits to every village in an area comprising roughly of 15 to 20 thousand of the population. The unit will visit only villages with a population

each of much less than 5000. It will issue its schedule of visits every quarter, well before the first date of the quarter. (This will be one of those services under the general maternity and child welfare service which may have to be financed partly by the charge of a small fee for incomes above a certain limit). Financial aspect to be worked out.

Service and Training

One of the main basis of this plan is the necessity for organising a whole maternity service in the province with its own special cadres, its rules and conditions, its special training institutes, its special service organizations, its amenities and its privileges. One broad principle underlying the arrangement of grades and salaries will be that as rural work is more arduous and less inspiring rural workers will be offered better emoluments either in the form of allowance or of higher grades and more amenities by way of extra leave or contribution towards their children's education or in any form to be asked for by the worker within certain financial limits. This difference will be made between rural and urban workers doing the same type of work.

The main categories of service and training will be doctors, midwives, health visitors, inspectors and research workers. Appropriate diplomas and certificates may be given at the end of dual courses, one a general maternity and child welfare course, the other a special course for training in one of the categories given above with a further division into rural and urban training. Wherever general practitioners or local doctors of any kind are invited to join the Institute work they may be asked to take an appropriate course. The workers at all voluntary organizations will have to hold diplomas or certificates of an authorised training institute. All domiciliary midwifery centres will be staffed exclusively by Institute-trained midwives of a certain degree of experience.

The ideal is to develop a service and not a profession or a trade union. The various grades and categories must all be imbued with a common esprit de corps as members of one great service engaged in a common vital task. To create that spirit and traditions peculiar to such service will be one of the main tasks of the provincial directors.

The Dais.

During the transition period between the present and the time say after 15 years when under this plan the number of maternity centres and trained midwives is sufficiently large to cater for all maternity needs the Dai will be gradually liquidated by (a) replacement by trained midwives and (b) compulsory training and registration and (c) compulsory retirement. (The last, by the way, will be a condition of all services under the Institute). A lot has been done by way of training dais though it is of course far short of what is needed. But with the help of legislation and some comprehensive maternity service plan like this one, the profession will be brought under normal control.

The Institute and Voluntary and Local Work.

Another basis of this plan is that the attack on maternal and child mortality should be perfectly unified and powerfully directed. To achieve that it will be necessary to weld all effort in the country into one as far as that can be done. So far as local authorities like Municipalities, district and Tehsil boards are concerned it is therefore inevitable that their work will be taken over completely by the Institute and be merged into its own organization. The financial adjustment may prove difficult but not impracticable. And naturally the local authorities will in each case, be given the right of inspecting and advising the Centres which may be receiving financial assistance from them. In regard to voluntary organizations and private maternity and child welfare centres it is clear by the same principle, that they will have to submit to the strictest possible supervision and control in the matter of staff, equipment, housing, treatment, fees and other things.

Research.

The statistics of the whole subject are in the most deplorable state. Not only are they unreliable and insufficient in those branches of the subject in which they are available but in certain aspects there are no statistics available at all. The available mortality figures are, as is well known unreliable; no authentic all India figures are available in regard to the causes of mortality or the precise part each of these plays in mortality; no figures are available about mortality, prenatal care in India, no precise assessment of the national or provincial needs in regard to maternity service or centres exists - or is possible in the present condition of our statistics.

This very serious lack is accentuated by the fact that conditions, causes and needs vary so much from province to province that generalizations made from partial or local statistics are bound to be uncertain and therefore useless. Also when we compare our statistics in the subject with those of other civilized countries the importance and urgency of a Central Research Bureau becomes quite obvious.

The Central Bureau will therefore be so organised that it will have provincial branches attached to the Provincial Institute for the protection of the maternity and child welfare and will receive from the provinces all the data that can possibly be collected. It ought also to have a section which will keep uptodate information about maternity and child welfare organization the world over.

TABLE I

Maternal mortality rates per 1,000 registered births

Province	1931	1932	1933	1934	1935	1936
N. W. F. P.	*	*		4.5’		
Punjab	*	*	*	*	1.0	1.2
Delhi	4.4	5.6	7.0	5.6	4.4	5.4
U. P.	1.2	1.2	1.0	1.4	1.4	1.3
Bihar	*	*	*	*	*	*
Orissa	*	*	*	*	*	*
Bengal	7.7	8.7	9.7	9.3	9.5	9.9
C. P.	7.3	5.8	5.0	6.8	7.9	7.9
Bombay	7.0	5.3	5.8	*	6.2	4.3
Sind	*	*	*	*	*	12.9
Madras	8.7	7.7	7.9	8.5	8.6	8.2
Assam	15.7”	19.8”	17.0”	15.1”	*	*

* Not available. ’ For 7 towns. ”For 13 towns only.

TABLE II

Female deaths per 100 male deaths in 1921-31.

	All Provinces	Assam	Bengal	Behar & Orissa	Bombay	C.P.	Punjab	Madras	N.W.F.P.	U.P.
0 - 1	90	91	96	90	91	92	99	88	90	96
1 - 5	104	103	100	104	108	99	105	104	104	105
5-10	99	96	92	92	109	101	106	100	100	98
10-15	95	88	82	81	109	97	109	92	104	96
15-20	126	164	124	120	134	122	111	140	108	114
20-30	131	174	137	113	127	134	115	142	125	122
30-40	101	104	93	95	98	100	109	102	115	104
All ages	906	905	907	913	925	902	896	973	859	876*

* Total female deaths per 1,000 male deaths for all ages.

TABLE III

Percentage of the death rate of females to the death rate of males in the different age-groups in 1930-32

Ages	Sweden	Germany	France	Japan	India
0 - 1	77	81	79	88	91
1 - 5	93	92	91	91	91
5 - 10	82	89	96	102	99
10 - 15	100	93	105	138	100
15 - 20	103	86	103	123	119
20 - 25	98	80	94	109)	125
25 - 30	95	95	89	117)	
30 - 35	97	105	75	121)	
35 - 40	96	102	69	113)	105

Causes of maternal mortality

	Calcutta		39 Women's hospitals in India (1936)	
	No. of deaths	Percentage of total	No. of deaths	Percentage of total
Abortion (septic)	33	4.71	19	2.67
Abortion (non-septic)	4	0.57	5	0.70
Ectopic gestation	6	0.86	2	0.28
Other accidents of pregnancy	7	1.00	3	0.42
Puerperal haemorrhage	74	10.56	82	11.53
Puerperal sepsis	224	31.95	231	32.29
Albuminuria and eclampsia	126	17.97	101	14.21
Other toxaemias	15	2.14	25	3.52
Embolism and sudden death	11	1.57	24	3.38
Other accidents of child-birth	26	3.71	90	12.66
Other puerperal conditions	10	1.43	1	0.14
Anaemia	165	23.33	128	18.00
Total	701	99.80	711	99.80

TABLE V

Infant mortality in 1921-31

	Recorded rates	Actual rates
All India	181	241
Assam	174)	242
Bengal*	186)	
Behar & Orissa	137	235
Bombay	185	237
Central Province	242	238
Punjab	185	238
Madras	185	225
N. W. F. Province "	144	258
United Provinces	168	266

* This includes Sikkim too. ' This includes Berar and Hyderabad.

" This includes Sindh and Baluchistan.

TABLE VI

	1932	1933	1934	1935	1936
All causes	6,298	8,320	8,253	8,455	8,946
Small-pox	69	717	33	306	214
Measles	16	18	27	60	42
Malaria	4	9	9	9	3
Remittent and undefined fever ..	147	167	186	146	114
Diarrhoea and enteritis	280	414	445	425	539
Dysentery	27	19	40	41	48
Debility, malformations and premature births ..	2,685	3,019	3,384	3,280	3,651
Respiratory diseases	2,217	2,828	2,983	3,039	3,174
Convulsions	422	594	562	563	683
Other causes	431	535	574	586	478

TABLE VII

Name of Province or State	Urban.			Rural.		
	Number of births in 1936.	Number of Maternity beds.	Ratio of Maternity beds per 100 births.	Number of births in 1936.	Number of Maternity beds.	Ratio of Maternity beds per 100 births.
N.W.F. Province	10,404	122	1.1	66,594	2	.003
Punjab	125,443	2,091	1.7	973,703	172	.02
Delhi	21,229	147	.7	9,630	Nil	Nil
U.P.	261,439	750	.2	1,626,159	102	.006
Bihar	30,087	253	.8	1,113,921	12	.001
Orissa	5,631	48	.8	249,066	13	.005
Bengal	84,855	600	.7	1,588,351	33	.002
C.P.	76,962	245	.3	574,306	15	.002
Bombay	130,000	2,436	1.8	612,331	199	.032
Sind	26,674	466	1.7	52,862	73	.14
Madras	149,988	1,051	.7	1,509,637	262	.017
Assam	6,349	104	1.6	233,355	16	.007
Hyderabad State		224	..	..	15	..
Mysore State	30,088	780	2.5	106,481	100	.09
Jodhpur State	..	10	..	..	..	..

TABLE VIII

Proportion of males born to every 100 females

Province	1924-28	1929-33	1934	1935	1936
N. W. F. P.	130	130	129	131	130
Punjab	112	112	112	112	112
Delhi	108	108	107	106	109
U. P.	112	112	113	113	113
Bihar and Orissa	104	104	106	106	106
Bengal	108	108	108	112	108
Assam	106	106	107	106	107
C. P.	105	105	106	105	105
Bombay	108	108	108	108	106
Sind	*	*	*	*	125
Madras	105	105	105	105	105
Coorg	107	107	108	114	108
Ajmer-Merwara	116	116	119	115	113

* Not available.

SOME DETAILS OF MATERNITY AND CHILD WELFARE SERVICES AND ORGANIZATION

By

Rani Lakshmibai Rajawade

As soon as a Health Visitor reports a case of pregnancy—the woman should be taken to her Matra Seva Mandir to be examined. If pregnancy is confirmed—she should be given a certificate of pregnancy. (If she is a woman labour worker, such a certificate to carry certain privileges—define).

A Health Visitor inspects the woman's home and ascertains that everything there is satisfactory. This Visitor advises her about her diet and tells her what clothes etc., to prepare for the child. If the woman is engaged in some occupation harmful to her condition she should be transferred to light work or stop working.

In the case of a woman worker she should be given leave with full wages 2 months before and 2 months after her confinement.

Every pregnant woman—to be examined and analyses made every 2 months for the 1st 6 months.

Every month—for the next three months.

Every pregnant woman should have:—

(a) A Wassermann test given to her.
(b) External examination — of pelvis-uterus, heart and lungs.
(c) Internal Examination — Pelvic measurements etc.,

Provisions for suitable nourishment, and proper housing arrangements—to be made for Mothers who cannot afford them.

Every confinement—to be in a lying-in hospital, where the Mother should remain for 10 days.

Food and clothing for the Mother and the baby to be supplied by the hospital—for all cases—unless the mother wishes to use her own clothes for herself and her baby. These garments must conform to standard—both in their making and cleanliness.

Determination of paying and non-paying cases	In accordance with the rules of the Social Insurance Scheme.

After the lying-in period, the Mother and Baby should visit the Matra Seva Mandir every 2 weeks until the child is 6 months old.

Every 3 weeks — until 1 year old,
Every 4 weeks — until 2 years old,
Every 3 months — until 4 years old.

If such visits are not made in time a Health Visitor should immediately go and find out the reasons for the non-attendance. If a woman without any specific reason fails to attend the Matra Seva Mandir, a smalll fine should be imposed. This may be recovered through her own wages—if a wage earner—or through that of her husband.

There should be a milk kitchen attached to every Matra Seva Mandir—to supply

milk free or
on payment as the case requires.

Prenatal and Postnatal care in the Matra Seva Mandir.

Mothers should be instructed in a popular way in the anatomy, physiology and hygiene of child birth and on the care of Infants.

This will be found most useful for Mothers both in the rural and urban areas. This will enable them to know what exactly to expect from the Domiciliary midwife or the Dai in a normal confinement, such knowledge will act as a check on the methods used by the latter. Mothers should be instructed on the following:—

1. Baby's toilet and clothing,
2. Feeding—breast and artificial,
3. Hints on upbringing,
4. Open air sleep,
5. What and how to tell a child,
6. Home labour for children,
7. Hygiene and
8. Care of the child's bedroom whenever such exists,
9. Bathing a child,
10. Child's toilet, (care of teeth, eyes etc.,)
11. Prevention of child from infectious diseases,
12. Clothing necessary for child,
13. Birth Control,
14. Physical culture,

15. Nourishment—for Mother and Child,
16. Housing conditions,
17. Tuberculosis,
18. Venereal diseases prevention of.

If possible arrangements should also be provided for the Mothers' general cultural development.

The Matra Seva Mandir—should arrange for propaganda through :—

Lectures with or without a magic lantern,
Pamphlets,
Cinema and the Radio,
Demonstrations,
Posters.

Special emphasis should be laid on dispelling ignorance and from freeing the women from age old superstitions and evil customs.

The Matra Seva Mandir—should be intimately connected with —

Children's playgrounds,
Parks for women,
Swimming baths,
Physical exercise centres,
Rest and recreational centres,
Rest homes and sanatoria for after confinement and other ailments.

Every citizen—urban or rural—should be registered for purposes of health at some health station either stationary or travelling. It should be made compulsory for every person to keep a health book—from birth onwards. This book should be accessible only to himself or herself and to the Doctors. Such a health book will be of immense use at the maternity home and the Matra Seva Mandir.

Each Matra Seva Mandir should have attached to it :

(a) Health Visitors—1 for every 1000 or 2000 of the population.
(b) Midwives — for domiciliary midwifery. The number to be fixed according to the requirements of the area to be served.
(c) Sets of Obstetric boxes:—
(Number of sets according to requirements of the area to be served.)

Each set to consist of 2 boxes :—

1. Box to contain utensils, such as basins, bowls, douche-cans, bed-pans, feeding

cups, feeding bottles, etc., breast pump (rubber), 3 pieces of large mackintoshes for the Mother, 3 smaller ones for the baby, kidney tray, jugs—etc., etc.,

2. Box to contain:—
Clothing required by the Mother,
Clothing for the Child,
Bed sheets,
Draw sheets,
Diapers—(sterilized)
Binders for the Mother,
Safety pins etc, etc.,

A payment to be fixed for the use of these for a period of 10 days. These boxes may also be lent to Mothers unable to pay for them—free of charge.

All Maternity homes to be run by the State—after 15 to 20 years.

During the period of transition private maternity homes should be made use of —but they should conform to a specific standard. There should be adequate laws to ensure standard equipment—staff—and inspection of these institutions.

They should be allowed to conduct only normal cases.

(a) Free of charge—In these cases remuneration to be made from Social Insurance Funds.
(b) On payment (from those able to pay).

Every Maternity home must have a special room for septic cases.

All cases which are definitely not classed as normal should be delivered in Maternity hospitals.

Provision of beds—adequate to the area to be served.

Maternity and Gynaecological Hospitals.

These should be so equipped as to be able to deal with any kind of complicated cases. They should be staffed by men or preferably by women doctors, experts in Maternity and Gynaecological work, and children's diseases.

It is presumed that these hospitals will be working as sections of general hospitals and as such will have the necessary X ray and other electric therapeutic apparatus. If, however, they work as separate institutions, necessary equipment must be provided to each. Resident medical officers to be attached to each. Unless working with a general hospital, each maternity hospital should have its own pathological laboratory under a fully qualified medical man or woman with special training in pathology.

Nurses —	1 to every 5 patients if not
(fully qualified)	1 to every 3 patients.

Each hospital must be thoroughly equipped and must have its operation theatre and sterilizing rooms.

There should be special wards for children.

There should be adequate arrangement for septic cases.

Unless working with a general hospital each should have separate wards for cases suspected of T.B. and Venereal diseases.

Pharmacists and	attached to the hospital to
Menial (staff)	be trained and qualified.

Every Matra Seva Mandir should have attached to each a
Creche or a day nursery,
Nursery School,
Kindergarten School.

The day Nurseries should be in charge of nurses specially qualified to look after the Physical and mental health of the children.

(These nurses should have a special 2 to 3 years course for this purpose).

Every factory employing over 50 women should have its own day and night Nursery.

In Rural areas :—

There should be a fully equipped Maternity hospital at every District town to deal with all complicated Maternity cases and Gynaecological treatment and operations.

They should have special wards for :—
Septic cases,
T. B. cases,
Specific diseases,
Children's wards.

Each such hospital should be connected with various rest homes and sanatoria in the district. Every District town should have—maternity homes and Matra Seva Mandirs—in proportion to its population.

Taluka town:—(10,000 to 15,000 population), should have a general hospital with at least 50 beds, of which at least 20 beds should be reserved for women.

Besides these there should be from 5 to 10 beds reserved for maternity cases (also prenatal cases).

There should be adequate accommodation for children. These hospitals should be visited periodically by experts—(Consultants, experts in their respective subjects) who could be consulted by the men and women of that Taluka.

Staff including Dentist and equipment of these hospitals as at the District head-quarters—but on a smaller scale. Attached to these hospitals there should be a system of travelling dispensaries to visit population under 5000|-. The Taluka hospital should have a Matra Seva Mandir attached to it.

Health visitors at the Taluka towns should be in the proportion of 1 Health visitor for every 2000 of the population. Every village with a population of 500 and over should have a dispensary or dispensaries under fully qualified Doctors or Hospital assistants.

Attached to this dispensary there should be :—

1 Health visitor for every 2000 of the population, Midwives—for domiciliary work and for conducting normal cases at the dispensary.

1. Every such dispensary should have 3 to 4 maternity beds of prenatal and normal cases, or the number of beds may be fixed according to need.

2. Every dispensary—to carry on health propaganda with special emphasis on Maternity and Child Welfare as well as Birth Control.

Every village of a population between 500C and 2000 should have a Health Visitor—Midwife (1 or 2) resident in that village. Family blocks for the relations of the midwife may be provided whenever necessary. They have been found most helpful at the Mission Maternity Hospital at Nagpur. Each such village to have 2 to 3 maternityp beds.

Other villages i.e., those with a population of under 2000 should be regularly visited by Health Visitors to keep watch on all pregnant women and advise them and to help them to be removed to the Taluka or District hospitals whenever necessary.

Women living in these small villages should be induced to go for normal labour to the nearest Maternity Centre. They should be given travelling facilities to and back from it.

If normal cases are delivered at home in the villages, use of the obstetric-boxes must be made compulsory. The role of the Health Visitor in all these rural areas is an extremely important one. Besides her own work she will have to undertake the work of educating the women in matters connected with maternity and the upbringing of their children and also in looking after themselves in general and Birth Control methods.

Maternity and Health propaganda to be carried by all rural dispensaries, the Travelling Medical Units and by Health Visitors, whenever they are stationed in rural areas.

Health-visitor-midwives, (1) residing in villages with population of 5,000 and under or (2) those who travel visiting villages—may inspite of prenatal examinations and advice given to the patients and also after making necessary arrangement for confining abnormal cases at proper centres—require the assistance of a Doctor for emergency maternity cases (or cases of emergency from any other cause).

Such a Health-Visitor-Midwife should in that case seek help from the doctor in charge of the nearest dispensary or the doctors of the travelling unit.

Attached to every Taluka hospital there should be a system of travelling dispensaries to visit places with population of 5,000 and under.

Each such unit to serve an area with a population of 15,000 to 20,000.

Each unit to consist of two vans:—

(1) One fitted up for medical purposes, and with arrangements for everyday laboratory examinations (Urine-Blood-Sputum, etc.).

(2) Second van to serve as residential quarter for the staff.

Staff:—1 man,
1 woman,
1 compounder,
1 nurse,
1 doctor.

The Doctors to have special training in eyes, ear, nose, throat, preventive medicine, elementary dentistry, maternity and child welfare propaganda, rural sanitation and hygiene.

They must keep an eye on all T.B. cases (developed or suspected), and cases of specific diseases, leprosy, etc. and see that they are adequately treated either locally or at the Taluka or District hospitals. Medical propaganda should be their special care. (Every dispensary and hospital should have a dentist attached to it.)

Matra Seva Mandirs should be established wherever possible—even in villages with a population of 1,000. These need not be so elaborate as the one at the Taluka town.

Maternity Weeks should be organised every year at Taluka towns for purposes of propaganda.

Health Stations

Until the whole medical service is nationalised the help of the general practitioner will have to be mobilised in looking after the Health of the population in both rural and urban areas.

These as well as all medical men and women connected with the service should be compulsorily made to take refresher's courses—3 months every 3 years.

Scholarships for training men and women in medicine, and scholarships for training health visitors should be offered. Recipients of such scholarships should serve on a specified salary for specified number of years—until the scholarship amount is partly|wholly paid.

All medical students and doctors should have special training in preventive medicine.

Men and women should be sent abroad to study Maternity and Child Welfare systems in the:—

U. S. A.
U. S. S. R.
England and Scotland.

Another important factor in lessening Maternal and Infant mortality would be to raise the marriageable age:

18 for girls,
20 to 25 for boys.

There should be a special bureau to keep in touch with the latest scientific discoveries in other countries.

It is necessary to appoint a board of medical men to go into the question of Ayurvedic and Unani systems of medicine.

Every medical student—intending doctor—should be fully conversant with both the above systems of medicines. The use of the Indian indigenous drugs should be encouraged.

All Vaids and Hakims should have a full 5 years course, with full knowledge of the sciences. Only the Therapeutical part followed by these people to be different from those practising western medicine. Special laboratories should be established for:—

(a) Preparing and Standardizing indigenous drugs.

(b) Research laboratories for special research along the Ayurvedic and Unani systems of medicine.

A system of ambulances (State and Voluntary) to be organized both for urban and rural work. Their need in rural areas cannot be sufficiently over emphasised.

All Health Visitors to have knowledge of midwifery.

Health Visitors, Nurses, Midwives	Should have 2 to 2½ years courses (3 in the case of nurses).

Their training should be uniform throughout the country. Women with approximately matriculation standard should be admitted for training.

Appendix V.

NOTE REGARDING FINANCES

By

Rani Lakshmibai Rajwade

A glance at the accompanying statement will show what small sums the various Provincial Governments are spending on Public Health in general and Maternity and Child Welfare in particular. A general health programme and an extension of the Maternity Services such as laid down in the previous pages of this note is bound to cost much more—perhaps one to two crores every year in each Province, but this sum will not be even one quarter of the stupendous sum we are losing every year through ill-health, sickness and large number of maternal and infantile deaths. So, quite apart from such intangible considerations as reduction in human sufferage it is important to bear in mind that large sums spent on health programme and provision of adequate medical services may represent not an increase but possibly an actual decrease even in current National Burden.

But how and from whom is the additional money to be raised is the most important problem that demands solution. The requisite finances can be raised:—

either (1) wholly from State grant or,
(2) by a National Health Insurance Scheme, or a combination of both plus grants from local bodies,
(3) by a general levy of about 4 as. from each person for himself and his dependants plus an additional charge according to means above a certain income.

The creation of a comprehensive medical service financed wholly by the State, available to all persons will be the best solution. But it seems unlikely that the State alone could shoulder this burden under existing circumstances. The service could however be financed by a combination of State grant, contributions from local rates and voluntary bodies and recovery of costs from patients treated, which last would involve some kind of means — test.

England and other European countries have long since taken recourse to systems of National Health Insurances to provide for adequate medical service of the bulk of their populations. But the National Health Insurance as it exists in England is nothing like a complete service. It makes no provision for medical services to large sections of the poor classes of the community. The largest gap effects the dependants of the insured persons, mainly wives and children but there is no provision to enable small traders and other persons working on their own account. Moreover the National Health Insurance fails to provide all the desirable medical services. The Majority Report of the Royal Commission on National Health Insurance says "in particular, we feel sure that wider the scope of these services i.e., the health services the more difficult it will be to retain the insurance principles. The ultimate solution will be, we think, in the direction of divorcing medical services entirely from the insurance system and reorganizing it along with all the other public health activities as a service to be supported from general public fund."

Therefore the National Health Insurance such as exists in England is neither practicable nor desirable in India. Firstly, for the absence of voluntary societies through which good deal of social insurance is being worked in England. Secondly, as said before, the scheme as it exists in England applies to only limited number of people and does not extend full medical service (including Dentistry-Opthalmology).

For India a social insurance scheme on the lines of the Soviet Social Insurance Scheme might be suitable with certain variations. The Soviet System of social insurance is far superior to the system in England as the medical services are both comprehensive and adequate. Moreover it extends its benefit not only to insured workers but their dependants.

Like the Soviet system the health services may in this country also be financed primarily through social insurance. All persons working in State co-operative or private enterprises and all who work for private families may be placed under the social insurance law. The social insurance fund may be raised exclusively by State, private enterprises, institutions and by private people employing labour. The contributions should be fixed in proportion to the amount of the wage bill, and these under no conditions are to be deducted from the wages. The medical service given to the workers and their families may be controlled by a Ministry for Health. The Ministry for Health will be responsible for providing such service and then entitled to receive the financial means required from the social insurance funds. But the whole cost of the medical service cannot be met with by the social insurance fund alone. There should be other funds just as in the Soviet system which are at the disposal of the ministry for health such as (1) funds provided by local budgets and trade unions (2) funds provided by State budget (3) funds provided by consolidated State budget.

With regard to India the protection of the health of the agricultural workers will present the chief difficulty. In Russia the protection of the health of the agricultural workers is chiefly financed through social insurance. The great majority of workers work on collective farms. A part of the "indivisible funds" of these collective farms is given towards the health insurance of the farmers engaged. In India the system of collective farms does not exist.

The simplest and the best way which may meet the conditions in India will be to finance the scheme for general health and maternity services by a general health levy. Every person may be charged as. 4 for himself and his dependants. The poorest will lodge a most emphatic protest against such a general levy. But if this method of financing may be examined without prejudice it will cost much less than the sum a person has to spend every year upon himself and his dependants. Taking an example, if we suppose there is a person whose income is only Rs. 8 and who has four children and a wife as his dependants, the only sum he shall have to contribute will be Rs. 1-8 for the whole year for full medical service. It goes without saying that he cannot get any medical aid worth the name in that amount privately. It may be argued that those who have much larger incomes than the average labourer shall also receive the same benefit by contributing the same small amount of as. 4 per head. To safeguard against this we should fix a maximum of income and all those earning larger sums than that, may be required to pay additional sums as cost of medical service according to their means.

These are some of the ways which have occurred to me for solution of the financial demands of the scheme for maternity services. But the whole question of finding adequate funds to finance the scheme must be referred to an Experts Committee.

Financial Statement

Provinces		1938-39 Expenditure on Public Health Rs.	Grants to Maternity and Child Welfare Rs.	Provincial total expenditure Rs.
Madras.	..	38,97,000	2,40,967	15,93,08,700
Bengal	..	46,71,000	18,000	16,88,82,000
U.P.	..	23,47,602	1,22,600	14,28,26,601
Punjab	..	24,39,000	53,800	11,96,13,000
Bombay	..	31,48,000	1,000	12,83,63,000
C.P.	..	5,57,000	40,494	6,18,90,000
Assam	..	2,79,000	Nil.	5,16,31,000
Behar	..	..	26,482	..
N.W.F.P.	..	..	1,000	..
Sind	..	..	..	..

Note:—Nil and dots represent that the figures are not available.

Legislative Measures

1. Compulsory Registration of Births and Deaths.

The vital statistics in India are well-known to be defective. They are compiled from records maintained locally by means which vary in different provinces, but generally they are kept up by the reports of the village officials in rural areas and by Municipalities in urban areas. In the latter case their accuracy will naturally depend on the amount of interest taken in the matter by the urban authorities and even the rural returns are probably more accurate on the whole. The reporting of occurrence of births and deaths is often a troublesome duty which the village headman or Chaukidar is apt to neglect. Obviously in the case of births he is likely to wait and see whether a child will live and so save himself in many cases the necessity of making a second report for its death. Taken on the whole the defect in vital statistics is probably to be estimated about 20 p.c. though it is much higher at its maximum.

The Births and Deaths and Marriages Registration Act of 1886 provides only for the voluntary registration

of births and deaths. Four Provinces only have so far provided themselves with their own Births and Deaths Registration Act whilst others have only framed rules for this purpose under the provision of these Acts. In a number of provinces provision has been made in Municipalities and Local Boards Acts but in most cases these Acts do not make registration of births and deaths compulsory. The result is that over large areas in most of the provinces there is even to-day no compulsory system of registration.

This defect has been a great handicap to all Public Health Departments and all the reports received so far have expressed their inability to send full data and information regarding maternal and infantile mortality. Even in areas where registration of births and deaths is compulsory the provisions of the Acts are rarely enforced. There is no need to say more, that the present machinery for collection and tabulation of vital statistics requires to be thoroughly overhauled.

Therefore it is of paramount importance that every province should have a comprehensive system of birth and death registration and adequate provision may be made for the enforcement of the Acts.

For the maintenance of more accurate classification and calculation expert statisticians should be employed by the Public Health Department.

2. Measures for the Protection of the Life and Health of the Child.

The indigeneous 'Dais' of India form a kind of hereditary guild. The art of midwifery has been handed down from mother to daughter and from mother-in-law to daughter-in-law. The age-long practices of these dais are inadequate and the methods of their art are completely unscientific. They fail to satisfy ordinary hygienic requirements and in difficult and abnormal cases their services are not only ineffective but dangerous. Inspite of her inefficient aid it cannot however be gainsaid that the indigenous dai enjoys the confidence of the population in villages at least. Firstly, there is no other aid available in the rural areas, and where there is, the villager can hardly be expected to antagonise the family 'dai' in favour of a trained midwife who though here to-day, may leave the village due to lack of sufficient amenities.

Through the Victoria Memorial Scholarships Fund attempts in the past have been made to train the Dais in some Provinces but without much success. Most of them are reluctant to learn more scientific methods and give up the codes handed down to them generation after generation.

The scheme of Protection of Motherhood and Childhood as laid down in the foregoing pages envisages a net work of expert Maternity Services. Yet for the time being, considering the vast population of India and lack of sufficient number of trained midwives the services of indigenous Dais cannot be wholly dispensed with. It is necessary therefore to allow the indigenous Dai, provisionally, to continue her practising only under strict supervision. Legislative measures should at once be placed on the statute book making it compulsory for every dai practising without training to register with the local authorities who will then issue a certificate of competence. The practice of the profession be declared illicit for persons not holding such certificates. Dais to whom certificates have been issued are obliged to attend practical courses in midwifery. These courses lasting about six months include instructions in the elementary theory and practice of midwifery.

Again the scheme as laid down in the foregoing pages aims at the establishment of sufficient number of maternity homes in well equipped hospitals by the Provincial Governments and the local bodies. It may be necessary for the transitional period to let the voluntary and private maternity homes exist but only under strictest supervision. They must be required to maintain a decent standard of comfortable accommodation and trained staff. This supervision should vest in Government Health Officers, and the local bodies should be given authority and power at once to provide for the licensing of these institutions and for their supervision and control by means of suitable laws.

3. Protection of Women Labour in Factories.

The Factory Act of 1934 regulates the hours of work for women and employment of expectant and nursing mothers. The provision for the establishment of 'Creches' which the Act encourages must be made compulsory in all the factories which employ, nursing mothers.

Maternity Benefit Acts are in force only in some of the Provinces. The rest must also enact measures in this behalf before long.

Appendix VI.

CULTIVATION OF THE NECESSARY DRUGS & PRODUCTION OF MEDICINES TO PROVIDE THE NECESSARY PREVENTIVE OR CURATIVE AID

By

By Rev. F. Caius

1. The above terms of reference imply that the subcommittee has

- A. to devise the means of providing the population of India with an adequate supply of necessary remedial agents, and
- B. therefore to consider more particularly
  - a. the production of medicines, and
  - b. the cultivation of drugs.

2. The conditions under which the supply has to be provided may be

- a. normal, or
- b. abnormal.

3. Under normal conditions provision ought to be made solely for the supply of drugs and preparations for which there is a demand by the medical profession.

This raises two points to be specially considered by the sub-committee :

Q. I a. Is provision to be made for the supply of every drug and preparation for which there is a demand?

Q. II b. if the supply is to be restricted, what are the factors which will determine the choice of the articles to be supplied?

4. The articles to be supplied must of necessity fall within one of the following three groups :

- a. drugs and preparations recognized by the British Pharmacopoeia,
- b. drugs and preparations other than those recognized by the British Pharmacopoeia,
- c. indigenous drugs and preparations made from them.

5. Reference to pharmacopoeial medicines (4 a) cannot but recall the fact that India has no "national pharmacopoeia", and that the recommendations of the

Drugs Enquiry Committee (1930-31) have so far not been considered or, if considered, not been given effect to.

Q. III a. Is this sub-committee of the opinion that the preparations of an Indian Pharmacopoeia comes within its terms of reference, and

Q. IV b. if so, is it advisable to take forthwith the preliminary steps?

6. Drugs and preparations other than those recognized by the British Pharmacopoeia (4 b) may be

a. pharmacopoeial medicines, that is, drugs and preparations recognized by the pharmacopoeia of a country other than the United Kingdom;

b. known and approved medicinal preparations;

c. patent and proprietary medicines.

7. With reference to 6a it must be borne in mind that a Pharmacopoeia is primarily intended to meet the claims and satisfy the needs of a particular group of physicians at a particular time, and that consequently there exists a great difference not only between Pharmacopoeias of various countries, but also between various editions of the same Pharmacopoeia.

However, a little consideration of the material clearly indicates a close resemblance between the drugs listed in ancient and modern pharmacopoeias, with this difference that scientific methods of standardization have developed and have been gradually introduced. The modern pharmacopoeia is thus above all a book of standards; but standards fixed for a particular place at a particular time, otherwise variable, and variable in such a way that a slight variation may mean an enormous difference in the cost of preparation of a drug.

Q. V This being the case, and admitting that the British Pharmacopoeia cannot be regarded as the national pharmacopoeia for India, is the sub-committee prepared to recommend in lieu of an article listed in the British Pharmacopoeia 1932-1936 a drug or preparation recognized by a previous edition of the British Pharmacopoeia, say 1914, or by the pharmacopoeia of a country other than the United Kingdom?

8. With regard to 6c a sharp distinction is to be made between

a. secret and

b. non-secret preparations.

9. It is well known that in India the traffic in secret remedies (8 a) whether imported or manufactured in the country, is enormous and that their use by the people is very extensive. And it is needless to add that, in spite of control, the same obtains in those countries which are held up as models.

Q. VI a. Does the sub-committee consider the control of secret medicines either impracticable or useless,

Q. VII b. and, consequently, favour a policy of non-interference?

10. India is equally flooded with medicines of known composition, made under patent protection or otherwise controlled by a single manufacturer (8 b), and to such an extent that "proprietary prescribing" is become the rule with a large number of practitioners.

The position of proprietary medicines with their formulae disclosed is, no doubt, ethically sound; on the assumption, however, that they have been honestly made and honestly marketed. But proprietary prescribing has many drawbacks, not the least being that too often a substance having a definite chemical composition or a pharmacopoeial preparation, is prescribed under their proprietary names, whereby added expense in the purchase is passed on to the ultimate consumer, the patient.

Experience has shown that the control of non-secret preparations is just as complicated and unsatisfactory as that of secret remedies.

Q. VIII Does the sub-committee opine that, nevertheless, steps should be taken to control the manufacture, import and sale of proprietary medicines?

11. Chemically the remedial agents mentioned above (4 a, 4 b) are

a. synthetic drugs or
b. drugs of natural origin or
c. galenical preparations, which have to be
1. imported into India or
2. manufactured in India or
3. grown, collected and prepared in India.

Q. IX Is the sub-committee ready to admit that its function ought to be limited to the choice of the drugs and preparations, leaving to others the discussion of the consideration of manufacture, import and sale?

12. Evidently the choice of a drug or preparation does not mean a mere name, it also implies a definition of the standards to which it ought to conform.

Q. X Who is to certify the identity, quality and purity of the drugs and preparations selected by the sub-committee?

13. Turning to indigenous drugs and preparations made from them (4 c) we are confronted with manifold difficulties which are every day increasing in number and magnitude. This is mainly due to the fact that:—

a. on the one hand the pharmaceutical methods of treatment and preparation which obtain in Europe and America have in the name of science been blindly followed in the treatment of indigenous drugs and the preparation of remedial agents therefrom, and

b. on the other hand in their desire not to be outdone, many vaids and hakims have modified and even abandoned time honoured forms of procedure to adopt in the name of progress methods of which they know little or nothing and the rationale of which they are unable to grasp.

14. The pharmaceutical methods of treatment and preparation now in vogue in Europe and America (13 a) are no longer random shots, but are based on a sound knowledge of the natural drug and an equally sound knowledge of the finished preparation; for example, a tincture or a fluid extract contain definite quantities of well defined active principles. The capital mistake has been to apply the same methods to indigenous drugs whose nature is practically unknown and to place on the Indian market preparations, say tinctures and fluid extracts, which contain uncertain amounts of unknown constituents.

Q. XI Is the sub-committee prepared to refuse recognition to such preparations, however large and pressing the demand for them, until such time as laboratory experiments have fixed the tests for their identity, quality and purity?

Q. XII Is the sub-committee prepared to deny vaids and hakims the right to prepare tinctures, fluid extracts, and any other preparations not recognized by the standard Ayurveda and Yunani treatises (13b)?

Q. XIII Is the sub-committee willing to encourage the manufacture of remedial agents prepared according to Ayurveda and Yunani standards?

15. Whether we like it or not for very many years to come millions of poor suffering people in India will have to be treated by the native doctor out of his stock of indigenous drugs with preparations compounded by himself.

But in the course of the last two decades signs of growing deterioration have become evident among vaids and hakims. There has been a well marked negligence on their part in the pharmaceutical side of their calling, and this has gone so far as to result in the production of dangerous remedies.

Q. XIV Will the sub-committee suggest means to rehabilitate the native practitioner in his own eyes and in the eyes of his fellow-men?

16. Classified according to their origin, indigenous drugs are

a. mineral,
b. animal, or
c. vegetable.

17. Drugs of mineral and animal origins (16 a b) prepared according to accepted Ayurveda and Yunani standards need not further arrest our attention for the present. As remedies they fall in one or other of the categories already dealt with; and as to the raw materials used in their prepartion, they have to be considered either as chemical or as dairy products.

18. But natural vegetable drugs (16 c), on account of their very source, raise a number of unsuspected prolems bristling with difficulties, whether the plants be considered as producers of

a. non-indigenous and indigenous drugs, or
b. solely indigenous drugs.

19. The plants which yield non-indigenous and indigenous drugs (18 a) are mostly alkaloid and glucoside producers. Their cultivation in India has been attempted time after time and, with the exception of the opium poppy, has resulted in a series of failures; for example, the history of cinchona cultivation is a very melancholy record of incompetence.

Foremost among the causes of ill success has been the failure to recognize that a plant is a living body which readily responds to slight changes in the conditions of its habitat, soil, climate, season, changes which deeply affect the nature and yield of the active principle: alkaloid, glucoside, oil. Had this elementary notion been taken into consideration no sane individual would have ventured to cultivate medicinal plants in the absence of an adequately equipped and competently staffed laboratory entrusted with the control and direction of the operations in the field....not with the extraction and purification of the drug for the purpose of sale or distribution.

There has also been the failure to realise that in the case we are speaking of (18 a) the plants are already being cultivated successfully and on a very large scale outside India and that it is futile to attempt the costly and difficult experiment of growing medicinal plants unless measures have been taken to protect the Indian product and outsell the imported drug.

Q. XV The sub-committee's criticisms and suggestions on these points would be welcome.

20. The vegetable sources of drugs used by Ayurveda and Yunani practitioners (18 b) offer numberless possibilities of giving relief to suffering millions in India. No doubt, there are difficulties in the way, but they are far from formidable; and in a sense this is the easiest part of our programme if we are prepared for spade-work and determined not to be rushed.

Q. XVI. Will the sub-committee help in the recruitment of volunteers ready to aid us with their expert advice?

Finally there remains to be considered the supply of remedial agents under abnormal conditions (2 b), say epidemics and war. A problem which brings us back to the consideration of **Medical Stores**, not only in abnormal but also in normal times, and is to be tackled by the sub-committee in accordance with its answer to Q. IX.

APPENDIX VII

A MEMORANDUM

on the

CULTIVATION OF DRUGS AND PRODUCTION OF MEDICINES IN INDIA

by

Dr. Salimuzzaman Siddiqui

The presentation of any comprehensive scheme for "the cultivation of drugs and production of medicines" can be only possible after taking full account of the relevant existing conditions in the country. This would require the collection of a large mass of information, some of which may already be at the disposal of the National Planning Committee, while the rest should be easily available to them. In the present memorandum it is intended to indicate the lines along which this informative material might be collected and to suggest the possibilities of a national effort in this direction, if it is undertaken as an intimate part of the general planning. Any attempt at piecemeal solution of the problem, is not likely to carry us very far. This may be merely stating a common-place, but it is a point which cannot be too strongly emphasised in view of the circumstances prevailing in India.

Before the advent of modern medicine the Ayurvedic and Unani systems of treatment were the only sources of medical relief to the country. Whatever difference of opinion there might be in regard to the merits of these systems it cannot be denied that they have rich pharmacopoeia, almost exclusively based on drugs of indigenous origin, and that even at the present day they form the only means of relief to nearly ninety per cent of the country's population. This may be partly due to their intrinsic merit and partly to their being better adapted to the peculiar necessities and economic condition of the country. Thus any scheme of cultivation and production of drugs has to take into account not only the drugs of modern pharmacopoeia but also those of the Ayurvedic and Unani systems. In view of this, the problem has been dealt with in two separate sections.

A. The Drugs of Modern Medicine.

Under this head the following information should be collected.

1. The quantities and costs of the crude medicinal drugs exported during the last 5 years to foreign countries, from various parts of India, particularly from the Kashmir State.
2. As far as possible, similar import figures in reference to medicinal preparations containing the active constituents of the crude drugs under 1.
3. The cost and quantity figures for the export from India of active constituents like 'Santonin'.
4. The consumption of medicinal herbs in the leading pharmaceutical concerns in India and their output in the active constituents dealt with under 2.
5. The extent to which the drugs under 1 and 4 are wild growths or are products of cultivation. How far the supply of these drugs is in the hands of private concerns and how far it is organised by the provincial and States Governments?
6. Important herbs from the neighbouring countries and the extent of their demand for the 'modern' and 'indigenous' medicinal preparations.
7. Statistics regarding synthetic, mineral and other medicinal preparations imported from abroad or manufactured by pharmaceutical works in India.

On the basis of the information thus gathered, it will be possible to draw up a scheme for a systematic gradual development of the production of medicines, in keeping with the relative urgency of the various drugs. Scientific cultivation of the more important drugs, so far as it is not already being carried out in India, is bound to be a comparatively slow process and can only be achieved through a liberal collaboration between the forest, agricultural and medical research institutions as well as a similar co-ordination of effort among the relevant branches of science in the various universities of India.

The production of medicines at present imported from abroad may, on the other hand, be capable of relatively more expeditious achievement, mainly by subsidising or otherwise encouraging the existing manufacturing concerns, in various provinces. I would not on the whole be in favour of opening up new pharmaceutical works, but it is essential that large drug producing areas like Kashmir and Hyderabad should have manufacturing centres of their own. For the manufacture of highly potent and standardised especial medicinal products, it would be advisable to investigate the possibilities of setting up manufacturing annexe in various medical and forest research institutions, with due regard to the nature of researches which are at present being carried out in them. One or the other of these institutions may be especially entrusted with the development of alkaloidal drugs in which India abounds and which form one of the most important groups of physiologically active plant constituents.

B. 'Indigenous' Medicinal Preparations.

Collection of comprehensive statistics under this head will not be so practicable as in case of the modern drugs. This is due to the fact that there are comparatively very few large manufacturing concerns (the so-called Dawakhanas and Rasayan Shalas) for supplying drugs to dispensing agents. In more recent times some bigger concerns like the Hindustani Dawakhana at Delhi or the Dacca Shakti Aushadhalaya have developed from small beginnings, but on the whole the tendency has been for the Vedic practitioners—to prepare and supply their own medicines, and among the Unani physicians to set up their own Dawakhanas. It may, however, be possible with the co-operation of the larger Dawakhanas and Rasayan Shalas to make a list of the most important herbs in point of cost and of quantities used in the indigenous prescriptions. Special arrangements may then be made for the cultivation and supply of such of them as are not easily available in the market and are usually substituted by poorer remedies. Mamira (Coptis Teeta) may be given as one of the examples in this connection.

The most urgent problem, however, so far as the medicines of the indigenous systems are concerned, is the introduction of controllable standards which are utterly lacking at present. With the co-operation of Ayurvedic and Unani boards of medicine, which have been more recently established in various provinces, and of the leading Dawakhanas and Rasayan Shalas of the country, it should be possible to fix up certain scientifically controllable standards for the more important basic medicinal products of the two systems. A system of voluntary registration of those Dawakhanas which undertake to keep to these standards and provide facilities for inspection and control may then be introduced. This is bound to lead to opposition in the beginning, but if the co-operation of the Indian Medical Boards and the leading Dawakhanas and Rasayan Shalas is obtained for this scheme the opposition will dwindle down in course of time as it did in connection with the registration of the Hakims and Vaids.

The work outlined above is enormous and would require the assistance of an army of trained workers in various spheres. This is what we sadly lack in India. The training of the right type of men in technical schools or universities largely depends on a regular demand for such trained men. At present there is a half hearted, fatalistic type of effort on the part of young men at the universities, to be doing something or the other till the main life current floods them away into listless inaction or to some magic glory over which they have no control. On the science side it may be said that in ninety-nine cases out of hundred there is no purposeful effort on the part of the students to get a thorough training in their subject, which they know would be the basis of their future profession. The Education Sub-Committee will surely give its attention to the matter. A joint deliberation of the Education and Health Sub-Committees would, however, be very useful in arriving at concrete proposals.

Apart from the trained workers with technical and general scientific education, the programme suggested in this memorandum will also require the help of a large number of research workers, as we have to build up practically every step in the industry for ourselves. Every drug has its own individual problems, which can only be tackled by efficient research workers. The lot of research workers who are not fortunate enough to carry with them the seal of a foreign degree is most unenviable. Their pecuniary condition and status should be improved if we want to attract capable men towards research career.

Besides the researches closely connected with the problems of the pharmaceutical industry, a great deal of intensive research in medicinal plants has got to be undertaken in India. Some interest in the chemical and pharmacological investigation of indigenous plant products has been shown by Indian workers in more recent years. The work so far carried out does not, however, bear an adequate proportion to either the great opportunities offered by the Indian flora or to the activities of Indian scientists in other fields of investigation. There is, moreover, little collaboration of effort between the chemist and the pharmacologist. It is time it should be realised that it is not possible to utilise the plant products to their fullest possibilities without an intimate and persistent study of their chemical constituents, and that their economic utility can, therefore, be best developed as a result of thorough and detailed scientific investigation. Medical research centres in India tend to overlook this fact much to their own disadvantage in the long run.

Chemical investigation of plant products rarely finds room at the University laboratories, partly because it is outside the usual rut of work prevalent among them, but mainly owing to lack of proper facilities in apparatus, chemicals and solvents. Also owing to lack of guidance in many cases. Special subsidies should be given to the universities for making adequate arrangements for plant research, and some machinery of control and co-ordination of these activities in the various university laboratories should be instituted by the National Planning Committee.

Systematic planning on lines suggested above would take its own time. The demand, however, for the manufactured medicines in India has since the declaration of War become so urgent that immediate steps should be taken to cope with the situation. The leading pharmaceutical concerns of India should be invited to submit their proposals in this connection and to state the difficulties they are encountering in getting the necessary supply of starting materials and apparatus, which were thus far imported from abroad. It is possible that a good many of the younger concerns have to close down owing to these difficulties. The National Planning Committee should do something to give them immediate relief, help them to develop with speed in the present emergency and exercise a check on any profiteering tendencies in them.

The research institute with which I am connected has for long been planning to undertake the largescale manufacture of some of its research products for sale. Most of these products are alkaloids, as the researches of the institute during the last ten years have been chiefly centred in the isolation and scientific investigation of a large number of alkaloids from Indian medicinal plants. If the Research Institute gets the necessary financial assistance it has applied for to the provincial governments, it will be in a position to undertake in its proposed manufacturing annexe the production of pure alkaloidal preparations for which suitable arrangements cannot be made elsewhere. This suggestion need not give any offence anywhere. Isolation of alkaloids in industrially profitable yields and standard purity is a highly specialised branch of work in pharmaceutical research and industry. We have been engaged in this work for a number of years and can be reasonably expected to carry it through properly. More concrete suggestion can be submitted, if the committee approves of this idea.

Other research institutions may also be invited to submit their proposals for undertaking the manufacture of any of the basic medicinal products for which they may be specially equipped. The proposals should in each case involve a minimum of financial assistance, for which the Planning Committee may arrange through provincial subsidies or private capital.

APPENDIX VIII

RURAL SANITATION.

By

S. A. RAHMAN

The problem of Rural Sanitation constitutes a very important item which contributes to the well-being of a Nation which is, primarily, agricultural in outlook and as such a very great majority of the people dwell in rural villages necessarily. Rural sanitation hence becomes part of the greater problem of rural uplift and education. Sanitation by itself becomes meaningless to villagers whose general standard of living is the lowest and who are unable to understand or appreciate the benefits that are likely to accrue to them. The main obstacle at present in the way of a proper spreading of clean and sanitary living among the 90 percent of India's population is the absence of any adequate connecting link that would enable them to grasp the importance of the practical benefits that will result to them.

This lack of suitable link between precepts and practice is apparently the cause of much of the failure that breaks the heart of the pioneering missionaries. So far, experience has shown that attempts at village uplift from, construction of model villages and houses, to wireless talks, cinemas, travelling demonstrations and propaganda have not had the effect that was hoped for and the main cause for this appalling situation appears to be that, to the ignorant villager all these are outside influences which have nothing to do with his own daily life. A further investigation and enquiry would reveal that the primary cause of this is the complete lack of, even, the most elementary of primary education in rural areas.

And, so far, for illiterate people we have been using mediums which would have been effective with literates. For conditions in India we have to find and adopt methods which will conform to the environmental difficulties, not the least of which is illiteracy. What is required is some method which is, at once, cheap, practical and of such a nature that the villager can be made to see for himself the advantage of the better standards and methods which is proposed to be inculcated into him. The crying need primarily is to arouse an interest in the villager and make him take an intelligent interest. Once this is achieved, it will be found that speedy results will follow. That is to say, village uplift, a part of which is rural sanitation, can never be successful if imposed from without. It must be brought out as a growth from within.

Instead of attempting more expensive and involved plans an attempt at introducing into the villages a practical example of clean living and hygienic practices, it is suggested, is likely to yield results that are more satisfactory. The villager will certainly have more respect for a person living in his midst who by different methods achieves what he in his existing condition of life had failed to achieve. He will perceive the advantages that result to a neighbour who, with a little extra knowledge and with the use of slightly different methods, leads a more successful life. The result would be, that impelled by a curiosity and by a desire for the well-being which he envies in his new neighbour, the villager attempts to imitate and even gets the help of the new man for his own improvement.

A plan that would take advantage of this psychological factor will at least have a better measure of success and for this purpose a person who is sent to live a model life explaining the advantages and disadvantages of their respective modes of living would have some at least of the desired effects.

To begin with it would be advisable to select and start with villages where there is a school and of course a schoolmaster. A trained sanitary inspector should be sent to such a village where during the first few weeks of his stay he would make a survey of the conditions of living, the number of people, the number of houses, the types of houses, the village surroundings, the incidence of disease and the like. Care must, however, be taken to see that the sanitary inspector does not reach the village as a representative of Government and as such who is likely to be held in awe by the villagers. From the outset the village should take to him as a friend and helper. Having made this preliminary survey the Inspector takes up a small plot of land and builds himself a house with the help of only local labour, local materials, local style. In fact everything connected with the house will be local. The model house will have proper windows and ventilations, proper provisions for latrines, separate locations for stalling cattle and hygienic drainage. The local labour that helps him in building up sees the advantages of the construction and of the methods adopted. The Inspector, in the course of the construction, explains the reasons for each innovation, not as a boss or as a superior being, but, as one of themselves who had found the value of these new methods. This will mean that by the time the house is complete, the inspector will have taught the villagers something without their having apparently realised that they have been taught at all. Incidentally the size and design of the house will be such that it could readily be converted into a school where the school master could also live. The Inspector then lives in this house with his family for some months, if necessary for a couple of years, gaining the confidence of the villagers and teaching them all the time by precept and, more important still, by example. He persuades them to cut windows in their houses to let in light and air, explaining the advantages of these. He points out the advantages of separating cattle stalls from places of human habitation. He demonstrates the advantages of using manures and compost which helps him to produce better and more. He tells them of the values of cleaner habits, the use of latrines and soak pits and explains the diseases that result from fouling fields and waters. He explains the causes of the more common diseases in the village and shows them how by observing a few simple rules of cleanliness these diseases can be stamped out. Better methods of farming are seen by the villagers. They realise the value of vaccination which helped the inspectors' house-hold, while the villagers discover that the disease which took a toll of their families, left untouched the family of the inspector. In all these activities the newcomer will have associated with him the schoolmaster to whom he will impart all his knowledge and whom he will train so that when the time comes for the inspector to depart from the village there will be somebody to take his place. During this period of example and precept great care must be taken to see that the women of the village are not neglected. If the women are not raised to the higher level, they will ultimately drag down their menfolk to the old systems and practices. How will any woman, who is filthy, ignorant and backward ever rear and train healthy and intelligent children. Here the wife, the mother or the sister of the inspector will be a useful ally.

This, in brief, will be the activities which the inspector can demonstrate to the village to which he is deputed. Before, however, the inspector and his family are sent out on this missionary endeavour they will be trained along the right lines and once they are in the village they will have to be called back at least once a year to headquarters for refresher courses so that they may keep abreast of moving times and not ultimately fall into the rut which they are expected to remove. Similar methods will be employed with regard to the schoolmaster and his wife who will take the place of the inspector when he leaves the village and goes to the next village. Such a scheme, of course depends to a very great extent on the personality and charactr of the men chosen as inspectors. Enthusiasm for the work should be among the inspectors, or they will not instil it into the people for whom they are working. And further they should not be of the type that gets tired of anything soon and wants to hasten to the next village. Above all patience will be a very necessary virtue and there also should be co-operating spirit in him.

Apart from the sending out of qualified Sanitary Inspectors on the one hand and the training of the available schoolmaster by the inspector on the other hand, there is a second course of action, which in effect, may be said to be more effective and easier than the rest. This is the training up of village school masters. That is to say there could be put into practice a method of training these men and their wives at recognised institutions of sanitation and hygiene for a period ranging from six months to one year and sending them to the villages to put into practical effect what they have been taught. These men will perhaps be more effective sort of propagandists in as much as they will remain in their respective village permanently instead of leaving after one or two years. Of course, in their case the value of refresher courses of a fortnight or thereabouts every year would be very much greater, and, in fact, a vital necessity. To allow them to remain in the village entirely out of touch and in the long run, out of control from qualified headquarters would mean that they might ultimately drift back to the old stage because the possibilities of these men falling into the general rut, habit and methods that had been prevailing for centuries, are greater.

In conclusion, in view of the existing conditions, financial and otherwise, as well as the question of time factor means that the last course would be viewed with greater favour. But for a beginning it would be advisable to make a start with the first method, namely, the sending of the sanitary inspector and the training up of the school masters. The obvious course would be to send sanitary inspectors to villages where there are schools and to train qualified school teachers for the purpose of sending them to villages where schools do not exist for starting such institutions.

A word as to costs. It is not suggested here that the scheme be put into operation in the 700,000 Indian villages simultaneously. What could be done is to divide up the programme from a provincial angle and make a start with the villages where there are schools and also start with the training of schoolmasters where financial exigencies permit with the co-operation of the education department. This becomes quite feasible when it is recalled that with national Governments with national outlooks a beginning is being made with regard to primary education in rural parts. In fact the period during which a teacher is undergoing his training can be the period for the training required for the purpose adumberated above.

RURAL MEDICAL RELIEF

By

S. A. RAHMAN

About 25 thousand medical practitioners at present are available for the 390 and odd millions teeming the Urban and Rural areas of the subcontinent of India: Over 95 percent of the practitioners, however, are concentrated in about 200 and odd towns and urban areas, thus affording medical relief to only a small percentage of the total population of the country. Along with this, consideration has to be devoted to what might be called two psychological factors, namely, the former's aversion to give up the castles that had been built during the period of walking the hospitals, and the latter's fear and, often, dislike of taking their complaints to the white-coated deity presiding amid apparently magnificent surroundings, to wit the modern hospitals.

Turning to the question of the quality of existing medical relief, it must be admitted, that while Allopathy, Homeopathy, and indigenous systems do exist side by side, among all these, despite quantitative shortcomings, allopathy, as far as Surgery is concerned, has almost a complete hold over the Country. In so far as pure medicine is concerned, however, allopathy, unlike in surgical fields, has to take a back seat in as much as a vast majority of Indians still prefer the older institutions of Hakims and Vaids to the newly introduced scientifically qualified practitioners. Here again it is necessary to bear in mind one important qualification, namely, that in big cities and even in district towns allopathy is definitely gaining ground. Apart from the indigenous and the imported varieties of medical relief there is the Homeopathic practitioner who finds his clientele among the more fastidious or among the progenitors of offsprings who cannot, except under almost insuperable difficulties, be compelled to swallow the "Nasty Stuff." Another question which has to be noted is the quantitative aspect of existing relief. Here, at the outset, it can quite categorically be asserted that the available relief is totally inadequate, more especially in Rural areas. There are no doubt hospitals in the bigger towns and even district towns, but at the same time, it cannot be denied that the number of beds at these hospitals definitely falls very short of the actual minimum requirements. In effect the majority of Indian villages, big and small, as also a number of the smaller towns, have no adequate medical relief. To this there is a further and a curious paradox, that while the number of medical practitioners falls very short of actual requirements there is a constant unemployment among the ranks of these practitioners. As against this, an unknown and quite a large proportion of the 390 millions resort to an equally unknown number of indigenous practitioners quite a number of whom are Quacks. From this situation the obvious and perhaps the only general conclusion that automatically suggests itself when this appalling state of affairs is juxtaposed with the problem of adequate medical relief for the Nation, is the necessity for a complete and thorough reorientation of the approach and perspective, involving a discarding of preconcieved notions drawn from the experiences of countries where conditions are totally at variance with those prevalent in India. When the objective is thus viewed, unhampered by the prejudices that have arisen, we are, surprisingly enough, confronted with a simplification of the main factors at issue, and which in its turn accuses us of not having done something merely because of our educated ignorance.

The net results of the new analysis is the emphasis laid on the need for an essential co-ordination, reshuffling and readjustment of the existing supply—both indigenous & Western—of medical relief to the demand. This will then have to be followed up and rounded off, which would involve a period of five to ten years,—an inconsiderable period in the life of a Nation.

This clarification of the general fundamentals of the problem necessarily leads on to a survey of the difficulties that have to be tackled by any scheme of medical relief. The more important and insistent of these may be classified under seven heads:— —

1. The appalling ignorance existing every-where which must necessarily bolster up the existing prejudices that naturally militate against a successful introduction of a scientific system. It must also be remembered that there would be forces working against such an innovation mainly through the instrumentality of existing quackery

which will leave no stone unturned to continue its hold over the ignorant masses.

2. Next comes the terrible poverty which is rampant. A poverty which means the entire dependence of any scientific plan on Governmental aid as against voluntary public efforts which in other parts of the world share the burden of medical relief. Poverty in general has yet another effect which lessens the effect of any medical relief. This is the deterioration of the physical conditions of the people as a result of insufficient and inadequate dietary which means that the susceptibility to succumb to the attacks of disease is greater than in other parts of the world.

3. In the third place there is the VASTNESS of the country and the innumerable diversities, not the least of which is the variation in density, for which allowances have to be made in the application of any general plan all over India.

4. Allied to the problem of density is the existing tendency to concentrate medical relief in centralised urban areas, referred to above, at the expense of rural areas. This becomes more unjustifiable when it is remembered that it is the rural population that contributes towards Indian revenues mainly.

5. A connected difficulty is that arising from the present financial position in the country. Any scheme that will have to be put into practical effect must necessarily be such that it will cause the least strain on the existing financial resources for the purpose.

6. Another difficulty is the present dependence of India on external sources for the supplies of essential medicine. Despite the strenuous efforts that are being directed towards the manufacture of such medicines of scientific nature, it must be admitted that for sometime to come at least India will have to depend on the world outside.

7. Lastly there is the question of the dearth of scientifically qualified practitioners inspite of the paradoxical situation with regard to unemployment described earlier. Something apparently will have to be done to overcome the present tendency among the vast majority of medical Graduates to prefer urban centres to rural areas.

Having established the general premises, consideration has to be turned to the incidence of diseases which is an important factor to be taken into account by any general scheme of medical relief. On this subject little or no information of the country in general is available and the only statistics available are those obtained by the Government of Bhopal. In Bhopal a statistical study spread over a period of six years has revealed that 83 per cent of the total ailments are amenable to simple treatment, if given in time. Another 13 precent constitute a class that essentially will respond only to hospital treatment, while the remaining 4 per cent require specialised treatment. These statistics, while they are of Bhopal, it can safely be asserted, would hold good for the country as a whole with slight variations which arise out of the vastness. These variations, however, it is suggested, will hardly be beyond a margin of four per cent. It is now necessary to consider two schemes of medical relief that are being experimented with in this country. One of these is the travelling dispensary. There are rather obvious reasons which militate against this system, chief of which is that it leaves a trail of unfinished efforts in its wake. The limitations resulting from the time factor which prescribes the itinerary of the travelling dispensary, it must be admitted, means that the personnel of any such unit will not have the necessary time for dealing with some of the cases and by the time a round is finished, there is every probability that fresh cases will have arisen at spots which it had just left. This is very likely to raise even resentment in the minds of the village folk the arousing of whose confidence is necessary if any scheme is to succeed. The Government of the United Provinces is at present trying out this scheme. In passing, however, it may be stated, that the scheme was attempted in Bhopal and was found very unsatisfactory and as such had to be dropped. However, there are features of interest in the scheme which behoves us to keep an open mind for the present till some further information is available from the experiences of the Government now trying it out.

The other scheme in operation is that attempted by the Government of Bombay, namely, subsidising medical practitioners. As this is also a scheme which will yield more complete data from the experiences that will be available to the Government of Bombay, it is necessary to keep an open mind. At the same time, in passing, some notice can be paid to some of the difficulties that arise. Primarily it may be said that the scheme is likely to breed a sense of irresponsibility among the subsidised fraternity and one cannot help feeling that the success expected would mean that there must be available a sufficient number of persons with the missionary spirit. Incidentally it might be added that there is a very probable likelihood that the subsidy will ultimately be looked upon as a mere additional source of income and as such it is needless to expand on the deleterious possibilities. Besides there would be a natural tendency to subordinate the part-time work involved by the subsidy to the full-time pratice and the consequences can easily be imagined.

The necessity, therefore, for a plan of campaign which must conform to the environment becomes more urgent. A plan that could be easily adapted to the general requirements of this country with its vastness and multiplicity of problems varying from province to province and even district to district in some cases, is therefore needed, and one which suggests itself is to start with the statistical divisions regarding the incidence of diseases mentioned above as a basic factor. As mentioned earlier 83 per cent of the average diseases respond to simple treatment, if in time, and as such do not require elaborate medical training spread over a number of years involving quite a heavy expenditure on the would-be medico. At the same time we have the indigenous practitioner who has spent almost the same period in the prosecution of his studies involving a comparatively lesser expenditure, who would willingly consider an income from a rural practice as a satisfactory inducement. The best and the simplest expedient would, therefore, be to adapt this material—apparently unsatisfactory in many respects at present—for this purpose. It must, at the same time, be noted that all Hakims and Vaids are not necessarily unscientific but for our purpose they do need some sort of preliminary training before launched out on their new career. That is to say make the indigenous practitioner with an additional six months to one year training in any of the bigger hospitals where he will gain direct knowledge of the elementary and modern principles of hygienic living, treatment and nursing, as the base of our pyramid. The obvious plan, then is to take as the first unit, a population ranging between 3,000 to 6,000 as the sphere of activity for the indigenous practitioner with an indigenous dispensary at his disposal. The figures adduced, here are not necessarily sacrosant and there, undoubtedly, will have to be adjustments varying from province to province and from district to district with due provisions for Provincial and District borders.

We have now left the remaining 13+4 per cent. The 13 per cent may now be taken as the next layer. For this we take about 30,000 to 60,000 as the population unit, with due qualifications for provincial and other vagaries. The nature of these cases means that reliance has to be placed on a fully trained doctor. This individual we then invest with a small rural hospital with about 30 to 60 beds. And by hospital it does not mean the new fangled and foreign conception of institutions where the most difficult job is to persuade the peasant to have confidence in. It will be a simple structure, commodious, well-ventilated and so simple as to be an object lesson to peasants in sanitation, clean living and of course, with suitable provisions for expansion as and when necessary.

Here it must be emphasised that these units are not watertight compartments independent of each other. The very nature of the task in hand means that both are complementary, and interdependent, co-operating with each other with the general good of the general public as the objective. The next point in the scheme would be the apex which will primarily be for the remaining four per cent of cases. For these we have already in existence hospitals of an up-to-date nature in centralised urban areas. These hospitals will be the centres radiating its knowledge and facilities to the far-flung branches. That is to say in addition to being the place for treating specialised cases, it would be the Nucleus for training up and brushing up the indigenous practitioner to a standard which will serve the purpose in the rural areas as also a refresher institution for the trained medico who will be in charge of the rural hospitals and further as needs arise expansions of suitable nature can be introduced.

This in brief may be stated to be the sketch of the structure that is proposed to be raised in this country. The next obvious step would be towards the consideration of the more important details. First and foremost in this respect comes the question of financial adjustments. In matters financial two general aspects have to be kept in view. Firstly what is ordinarily considered to be "Financial difficulties" under which this country is labouring. Secondly the very vastness of the country, the importance of which cannot be re-emphasised and reiterated with regard to every aspect of the problem.

This, primarily leads us to select as an approach to the problem of medical relief the provincial divisions already existing, particularly when the status quo with regard to medical relief and administration is within the provincial spheres.

Before proceeding any further it will be necessary to digress to a certain extent and estimate the personnel of the rural medical units so that we may gauge the approximate expenditure that will be necessary. In the first place there is the indigenous dispensary. Here there must be a hakim or a vaid on a salary of about Rs. 40|- to 75|-, a compounder and a "Mixer." Roughly it might be estimated that the annual cost of such a unit including the replacement of drugs would be about Rs. 800|- to Rs. 1,000|-. With regard to the overhead charges the initial requirements are premises and the necessary stock of drugs. As regards premises it is absolutely necessary that efforts must be directed towards obtaining these with little or no extra expenditure whatsoever. This is in fact simpler than it would strike at the outset. There is always the distinct possibility of converting existing structures in a very large number of cases. Further a fostering of selfsufficiency in the villages and the encouragement that could be given to free gifts from the wealtheir villagers would .constitute ultimately a substantial source of income. That is to say the importance of decentralisation so that the people concerned will incidentally have an acute consciousness of the importance and value of what is being done around them and for them. It is proposed that with regard to the basic units of indigenous dispensaries there would be the necessity to make the villager conscious of the values of the relief that will be available to him. He must realise that this is not something free which he can waste disdainfully. He must be made to realise that it is part of his own wealth and as such he has a very grave responsibility. It could either be possible to depend on voluntary contributions which would, at least partly contribute towards the cost of maintenance. Of course this will not exempt the liabilities of Government — but a system of educational propaganda could be initiated by the very persons manning the dispensary by which, in due course, and quite rapidly too, quite a good amount would automatically and willingly come from the villager himself. As regards the probabilities of converting existing structures surveys by district authorities and officers would most certainly reveal that the total costs to Government could be reduced to almost negligible proportions.

The next unit is the rural hospital. Here the minimum requirement would be two to three qualified doctors of the sub assistant surgeon grade, one of whom will ultimately be a woman. The senior of these will be on a 80 to 120 grade and the other two on a 60 to 100 grade. In the beginning however, there need be only two doctors. Other members of of the staff would be two compounders, two dressers and half a dozen menial staff and the total expenditure could be limited to about Rs. 6,000 to 8,000 per annum. Turning to the overheads including premises and stocks of equipment the expedient of converting existing structures would be the solution which will reduce the expenditure enormously. In cases where this is not possible the model structure could be erected as an example for the rest to follow. With regard to the running expenses one way out, will be to depend on local and district boards for at least half the cost of what remains of the overheads and about 60 per cent of the running expenses.

When the costs are thus divided evenly it will be seen that the amount of new expenditure which would require Governments to find revenues would be almost negligible. It must however, be emphasised that the figures adduced so far are neither categorically absolute nor is there any sanctity attached to them. These are only as examples for giving a practical colouring to the picture and in all cases it is a matter which of necessity has to depend on local circumstances. But before departing from this question it may be remarked that when costs are thus divided, as for example the rural indigenous dispensary on the 3,000 to 6,000, the administration of the scheme will be simplicity itself provided willing and wholehearted work is forthcoming from the pioneers.

This leaves the apex units, the presidency and district town hospitals and it need only be stated that no new expenditure would be involved owing to existing facilities and expansion can be based on financial exigencies. On the question of the model and working of these units, however, this memorandum is not dwelling at length as the Chairman of the sub-committee is producing a comprehensive system of working these.

But before concluding, an explanation must be given with regard to Leprosy, Tuberculosis and mental cases. These, it must be stated, do not come within the scope of this scheme for the following reasons.

Mental diseases and leprosy constitute subjects which of necessity come within the field of provincially centralised institutions, for very obvious reasons. These are such that the addition of this work to either the indigenous dispensary or the rural hospital would mean a deterioration of the work of these institutions.

As regards Tuberculosis the Lady Linlithgow Campaign has already provided a nucleus for dealing with this problem separately and for a beginning sufficient efforts, both financial and otherwise, have been organised. Besides it will be remembered that this is not a disease which could safely be entrusted to the rural workers as most expert knowledge of diagnosis is essential.

The Study of Indigenous Medicine and Medical Relief in India.

By

S. A. Rahman

The Ayurvedic and Unani practice have their roots and origin in the main civilisation of India, namely the Hindu or the Aryan and the Muslim civilizations, and, as such, thrived and flourished best in the respective periods of these eras in Indian history. And, during these periods both have been responsible for valuable contributions to the Indian culture of healing, both with regard to theory and practice. The latter reached its peak during the Moghul period, while the coming and expansion of this did not to any great degree lessen the hold that the former had over the population. Science, however, had not then achieved that progress which had been attained during the period in which Western infiltration played a prominent part in the Indian life. More particularly, medicine came to occupy a place among the sciences only during the middle of the 17th century. From this stage the subject rapidly advanced and became an international science. It must, therefore, be stated as a matter of fact that the study and practice of medicine in the modern day is one, and that there can be no two or more different studies and practices of the same. Its position of utility to mankind and the common features all over the world despite other differences compels us to recognise that as a scientific phenomenon there can be only one Medical system. There is only one anatomy, one physiology and one pathology and all for the same human body. As such all studies and discoveries in this aspect of human existence constitute one Errand of mercy to suffering humanity and it behoves every student of medicine, whatever may be his particular branch of study, to bear in mind that whatever he can contribute is to suffering humanity in general and not for a race or nation in particular. It is thus that the study of medicine proceeded uniformly in every part of the civilised world. India in the form of what is now - sometimes contemptuously - termed indigenous medicine, had been developing systems which perforce had to remain isolated because of the insuperable difficulties with regard to communications. And, when free communications did contribute towards unifying and uniforming the subject, the State that arose in India, unfortunately, with pre-conceived prejudices and notions completely neglected the developments that had been progressing for centuries previously. The Unani and the Ayurvedic practice with the coming of Western civilisation fell away from the graces of the State and powers that be.

No science, it stands to reason, has ever kept abreast with the march of time without being God-fathered by the State under which it had to exist. Small reason, there was for indigenous medicine to keep its head above water in view of the worse than stepmotherly treatment it had to undergo. In fact, it must be said to its lasting credit that India's lore with regard to medicine survived and still lives because of some-thing inherently valuable in it: Something which no amount of suppression or oppression or neglect could annihilate. At the same time it must be admitted that two centuries of vicissitudes did leave a mark on the Ayurvedic and the unani practices. Instead of assuming a scientific outlook they degenerated into apparent oblivion and into a world of thought classified by the modern western mind as unscientific. Fortunately, however, the 20th century saw the rise of pioneers, whose courage and breadth of vision have now not merely lessened, the acceleration with which the Indian practices were going into oblivion, but have in fact gone a step further and have helped the two to regain their rightful place in international medicine. These pioneers realised the urgent and vital need of keeping alive the practices which had stood the test of time for ages. The realisation, by these, many of whom have gone to their graves unsung, of the need for their knowledge to become part and parcel of international medicine was one of their greatest contributions to this revival.

I have, from personal knowledge, known the almost super-human efforts of one of the greatest of the pioneers, the late Hakim Ajmal Khan, to create an institution that will carry on the tradition of medical practice in India with the improvements obtained by the study and practice of the subject outside India. This is the Ayurvedic and Unani Tibbia College at Delhi where students are taught anatomy (on human body), physiology, pathology, minor surgery and the use of specific drugs in addition to their own indigenous pharmacopiea. Other institutions of this kind have since been created at Lucknow, Aligarh and Benares among other places.

Undoubtedly there are very many shortcomings, but as mentioned earlier, it is no small wonder that they do exist. The most wondrous part of the story is that they successfully came out of the struggle for their very existence in spite of all the handicaps referred to above. It would, in my opinion, be a definite disservice not merely to our country but to science itself to lable the students qualified from the above-mentioned institutions as 'unscientific'. This point is rendered more emphatic when it is remembered that there are now hakims and vaids who have received scientific training of the type that had been introduced from the West and yet practice in indigenous medicine.

In the interests of science and in the interest of humanity itself, it would be a crime to allow this neglect of our heritage to proceed further. After all it must be remembered that nature itself has provided in different parts of the world the necessary antidotes for the ailments peculiar to each part. This is no less true of the Tropics. There is no doubt that there are very many examples where an indigenous practitioner had been successful in cases where the western system failed. This itself is an indication that there are very many things which the ayurved and unani can contribute to the world's knowledge of medicine. These, however, can only become available to the world if properly tapped and encouraged. It is admitted frankly that there is something in my scheme for rural medical relief which may not be termed wholly scientific, at least at the beginning. But if the Provincial Governments make a start with an attempt to turn the indigenous practitioners to more useful channels and for this purpose start institutions with a scientific outlook for training them, there is no reason why in the course of the next ten years or so the whole system and its personnel should not become scientific in the accepted connotation of the word. At the same time this would mean that the drugs which have so far been confined to the indigenous practitioner will be studied on a scientific basis and their values added to the international pharmacopiea. After all to make a start even as an experiment is not much, considering the valuable contributions that are possible.

Appendix IX

A NOTE ON THE COMPILATION OF VITAL STATISTICS IN INDIA.

It is universally accepted that properly organised service for the collection of vital statistics is an essential feature of any National scheme for the maintenance and improvement of community health. Though generally understood but not sufficiently emphasised is the fact that the recording of vital statistics is subservient to their utilization. This view-point immediately gives a wider meaning to the term vital statistics than what is customarily understood by them. To serve as an efficient instrument they should be fashioned in accordance with the purpose for which they are to be used. I will touch upon this subject later on, but it may at once be stated that the health and welfare worker draws upon statistical data essentially for the following purposes:-

1. For promptly rendering curative and preventive service to the community.
2. For surveying the existing conditions and their trends with a view to planning well-balanced and practical schemes of health protection.
3. For using them as yard-sticks for measuring the progress made as a result of organised health endeavour or of certain observed events arising out of natural causes.
4. As a means of assessment of national loss resulting from inefficiency due to invalidity etc.

Such stock taking could be effectively employed to awaken public conscience in regard to community health, and should lead to investigation of the causes of sickness and of the ways and means for their removal.

Before entering into what statistics should be collected and how they should be utilized so as to serve the above objects, we may briefly review the present position. There are three ways in which statistical data may be collected:-

(A) Routine collection of vital happenings.
(B) Routine periodical collection of data (decennial census).
(C) Special surveys carried out for specific purposes.

The routine registration, compilation and presentation of vital happenings have formed the subject of comments from time to time, which are mostly adverse. The Memorandum on Indian Vital Statistics presented by the Public Health Commissioner with the Government of India to the last meeting of the Central Advisory Board epitomises the present position and makes certain recommendations, which deserve careful consideration. The memorandum refers to the defects in registration of vital statistics, errors arising in the course of compilation and those observed in the manner of presentation. It will serve no useful purpose to repeat the various issues raised in that memorandum. A few points may , however, be mentioned in passing. The system followed in different provinces are given at the end of the above Memorandum.

Registration—Besides the defects mentioned in the Memorandum even a cursory examination of the village birth and death registers reveals a large number of omissions and obvious mistakes in the various columns, which remain uncorrected and consequently vitiate the final compilation. While some improvement in the primary collection of data is believed to have resulted from better supervision in areas administered by health officers and further improvement may be expected from extension of the service to other areas, it is hardly to be expected that with so palpable fundamental defects in the organisation, particularly as it exists in rural areas, the mere appointment of district health officers will meet the requirements. Calcutta experience would seem to show that even in urban areas recording of births and deaths is far from satisfactory. For instance, as a result of enquiries made in a certain part of the city inhabited mostly by well-to-do business men, over 20% deficiency in birth registration was found. In another investigation in the **bustee** area it was revealed that of the five deaths of adults which had occurred within a short period, three had escaped registration. That such a thing should be possible in an area where the system of sub-registrars is in vogue, is indeed surprising.

In spite of the legislative sanctions, the position in regard to notification of cases of infectious diseases is hopeless both in rural and in urban areas. The causes of the failure are different in doctor-less rural areas and in the urban areas where the profession is overcrowded. In the former, the means of diagnosis are lacking, while in the latter the lack of public health sense even amongst medical practitioners is mainly to blame. This deficiency, again, may be traced to defective training received by them in the medical schools which cannot be removed until a new orientation is given to the medical curriculum. A common feature in both cases however, is the fear of consequences of reporting and lack of public spirit on the part of the people which again may largely be ascribed to inadequate and ineffective education of the public in matters relating to health. An interesting though embarrassing feature of notification of most epidemic diseases in rural areas is that while in the beginning of the outbreak many cases are missed, the notification in the later stages of the epidemic are inaccurate in the reverse sense, i.e. the raging disease comes in for blame for all morbidity and mortality and the tail-end of the epidemic is unreasonably prolonged.

Apart from the clerical errors in compilation introduced through the negligence or inefficiency of none-too-enthusiastic police and revenue officials the raw data suffer various forms of mutilation in the course of transmission. Attention has been drawn to some of these defects in the Public Health Commissioner's Memorandum and they are too palpable to require further comments.

At present the routine registration comprises of births, deaths and cases of notified diseases which vary in different provinces. Position regarding notification of infectious diseases is too unsatisfactory to deserve detailed consideration. The question is whether the items of information provided in the births and deaths register are adequate to meet the requirements of the health administrator. The answer is obviously in the negative.

So far the discussion has been confined to the deplorable condition of the vital statistics but the matter of equal public importance is the extent to which the statistics are made use of. In the first place the data are not transmitted with sufficient speed to the local health protection agencies who might take immediate steps to check the progress of the diseases and to investigate into the causes of the outbreak, with a view to preventing their recurrence. Moreover, these agencies are, as a rule, not adequately equipped to carry out the necessary preventive measures. Again the provincial organisations are, as a rule, not properly staffed to make use of the statistical data to the best advantage.

Such special surveys as have been carried out are few in number and diverse in their purpose and methodology. It will serve no useful purpose to include them in a general discussion like this. All one can say is that more of them will be welcome but to justify the expenditure of time and money spent on them proper planning is essential. The object must be clearly defined and the schedules should be prepared with care and understanding. The organization for the collection, analysis and interpretation of the data should be clearly and carefully thought out.

It may also be mentioned that attempts have recently been made to evolve schemes of health indices which may be of general application for purposes of assessment of health conditions and health services in rural and urban areas. Reference may be made to Falk and Stautman's health indices and those more recently put out by the health organization of the League of Nations. These schemes are products of long and careful study by experts. However, it is felt that none of these schemes are wholly suited to Indian requirements and must necessarily be adapted to Indian conditions by a committee of experts before they could be utilized for the purpose. The chief merit of the health indices is that they cover practically all the subjects relating to health conditions and the factors influencing communal health. However, I cannot help feeling that the items of information derived from these indices present a disjointed account of the happenings rather in the nature of a zig-zag puzzle difficult to piece together into a connected mental picture. An attempt is now being made to draw up a scheme of health survey in which the various items of information may be collected with definite objectives in a systematic manner so that certain questions which directly interest the health administrator may be answered and a rough idea of comparative position regarding each item separately and of associate items in combination may be obtained. The scheme is calculated not only to provide data for planning health schemes and assessing the results, but also for isolating problems about which information is lacking and which might be profitably investigated. Before it could be recommended for general use the scheme will necessarily need field trials and opportunity for such a trial is at present awaited. Even though I am not in a position to put forward a cut-and-drive scheme at the present moment, I should like to take this opportunity of emphasising the importance of assessment of results of health schemes in India specially because all such schemes are at present in the experimental stage.

With regard to the census no specific remarks are called for because they are usually entrusted to competent direction and are as well organised as one could expect under the circumstances. The only point that needs to be reiterated is that quinquennial census would be very welcome if funds would permit.

The question of questions is what could possibly be done to improve routine collection, compilation and utilization of vital statistics in India. In making any recommendation one has to keep in mind the economic and other handicaps existing particularly in rural areas. The proper way to deal with the subject, to my mind, is to take these items in the rverse order. As I have pointed out before, there is no special merit in mere collection of statistical data. They must, if they are to serve a useful purpose, subserve the needs of the health organizations. In the absence of proper central or provincial, district and local agencies which are in a position to utilize and profit by statistical data, the lamentations regarding their deplorable state are unnecessary and uncalled for. It is not intended to go into the question of what could be the proper type of organization for health care and protection suited to Indian conditions. This by itself is a big subject which needs separate treatment. Moreover, as I have indicated before the various schemes for providing medical care and health protection to the rural areas are at present in an experimental stage, and unless the relative values of the various systems have been adequately assessed, it is idle to discuss the merits and demerits of any particular scheme. Since, however, no scientific assessment appears to have been planned by the exponents of the various schemes, the future cannot be looked upon with equanimity. Since this fundamental information regarding the utilizing agencies is lacking a detailed consideration of the contents of statistical data to be collected and compiled appears to be premature. However, on general grounds, a list of the items of information which the health authorities could profitably utilize is given below. It is supplementary to those contained in the village registers. For convenience the list is divided into two parts:— (1) items relating to vital happenings and (2) items relating to environmental conditions affecting community health. This list is primarily meant for rural areas.

(a) Vital events.

1. Marriage,
   Age at cohabitation.
   First or later marriage.

2. Pregnancy.
   Miscarriage,
   Abortion,
   Premature birth,
   Mature birth,
   Still birth or live birth.
   Age of mother at birth,
   Order of pregnancy.
   Interval between pregnancy and immediate past pregnancy.
   Residence of parents.

3. Infant mortality.
   Neonatal,
   Postnatal.
   Causes — (i) Diarrhoea, (ii) Small-pox, (iii) Inanition, (vi) Pneumonia, (v) Accidents and injuries, (vi) other causes.
   Vaccinated or not.

4. Notification of disabilities in the pre-school child period.
   (i) Blindness, (ii) Middle ear disease, (iii) Paralysis.

5. Notification relating to infectious diseases in the school age period.

6. Information relating to sex habits and mental conditions in the adolescent period.

7. Information relating to loss of time from sickness. Sequelae of diseases likely to handicap the person, mentally and physically in adult life and affect his earning capacity.

8. Notification relating to crippling in the old age.

9. Death,
   Age at death,
   Cause of death — according to a short prescribed list.
   Residence of deceased.
10. Epidemic disease — notification (probable diagnosis).

(b) Contents relating to environment.

1. Water supply (new sources only)
   Type of supply and sufficiency.
2. Disposal of refuse and night-soil, (new methods employed).
   Type and efficiency.
3. Housing — Kutcha, Pucca, (new houses only).
4. Nutrition,
   Food supply,
   Milk supply (milch cattle purchased or died).

It is contended that in villages where everybody knows everybody else except for items (a) 6 and (b) 4, for which definite information may be difficult to obtain any intelligent, literate and wide-awake villager with the assistance of a trained village dai can not only collect the above information without much difficulty but also make use of some of it to the benefit of the community. Copies may be transmitted to the local and district health authorities as well as to the provincial authorities direct. The local authorities may again report to the higher authorities after taking necessary action. It must be recognised that no one however enthusiastic he may be in the beginning can be expected to carry on this and other health work continuously for any length of time unless he is given proper recognition and a small honorarium. What is however more important is that the persons concerned should feel convinced that their labours are rewarded by prompt mobilization of the local preventive and curative service. Still better results will be achieved if they are actually invited to participate in the official endeavours for the betterment of the village life. The suggestion that the registration and reporting of vital statistics should be transferred from the Chowkidar to some other agency is not new. The Director of Public Health of United Provinces, for instance, had submitted his proposals for the appointment of circle health officers among whose duties this function was included. In his scheme, the official was to be in charge of about 25 villages and was to pay a weekly visit to each village. In other places health visitors and other officials have been commissioned to do the job. The innovation in the suggested scheme is the employment of non-official permanent resident of the village, who, if properly selected can with the cooperation of the village dai, keep himself informed of the various events in the village without much effort. Another point is the provision of incentive for work.

One may anticipate two criticisms in such a scheme, viz: that suitable agents may not be available in all the villages, and that the financial implications may stand in the way of its introduction. The real answer to these objections is, "where there is will, there is a way." While it is idle to expect any achievement without money and special endeavours I feel convinced that the necessary funds can be incorporated in an adequate scheme of medical care and health protection costing about As -|6|- per head of population.

Appendix X

INDIAN CHEMICAL MANUFACTURERS' ASSOCIATION

Report of the 'Medicinal Preparations Sub-Committee'

PART I. INTRODUCTORY.

Genesis of the Committee

1. At the All India Conference of Chemical and Pharmaceutical Manufacturers held at Calcutta under the auspices of the Indian Chemical Manufacturers' Association in November, 1939, a resolution was adopted to form a **special committee** to investigate into the possibilities of the development of the existing drug and chemical manufacturing industry in this country. The question assumed particular importance in view of the outbreak of War and consequent shortage in India of many imported basic chemicals and pharmaceuticals required not only by the drug manufacturing industry but also by other industries. This also resulted in the withdrawal of several synthetic remedies and pharmaceutical specialities largely prescribed by the medical profession and consumed by the public.

2. This special committee at its preliminary meeting in December, 1939 discussed in detail the problems facing the drug manufacturing industry and trade and realised at the very outset that the problem was so vast that no single Committee would be in a position to deal with it in a satisfactory manner and indicate proper lines on which progress could be made. Accordingly, the special committee decided to appoint seven sub-committees as follows with powers to co-opt:—

1. Acids and Alkalies Sub-Committee.
2. Coal and Wood Distillation Products Sub-Committee.
3. Fats and Oils (including Essential Oils) Sub-Committee.
4. Agricultural and Forest Products Sub-Committee.
5. Mineral Products Sub-Committee.
6. Medicinal Preparations Sub-Committee.

7. Solvents Sub-Committee.

These Sub-Committees were requested to report on the economic possibilities of manufacture of various items included within their respective domains with special reference to the availability of raw materials in this country or which could be made available etc.

3. **Personnel of the Sub-Committee:**—The "Medicinal Preparations Sub-Committee" was formed with the following personnel:

Bt. Col. R. N. Chopra, I.M.S. (Retd.), Chairman.
Dr. H. Ghosh, (Standard Pharmaceutical Works Ltd., Calcutta), M.B., M.S.P.F. (Paris).
Dr. U. P. Basu, D.Sc., P.R.S. (Bengal Immunity Research Laboratories, Calcutta).
Dr. B. N. Ghosh, D.Sc. (Lond.), P.R.S. (Union Drug Co. Ltd., Calcutta).
Mr. D. S. Amin, (Alembic Chemical Works Co. Ltd., Baroda).
Dr. B. Mukherjee, M.D., D.Sc. (Mich.) (Biochemical Standardisation Laboratory) Secretary.

The Secretary of the Indian Chemical Manufacturers' Association acted as the Convener and was an ex-officio member of the sub-committee. Mr. D. S. Amin, being out of Calcutta, could not attend meetings of the sub-committee and sign the report.

4. **Procedure:** At the first meeting of the sub-committee, on the proposals of the President and Dr. H. Ghosh the following gentlemen were co-opted on the sub-committee.

1. Prof. B. C. Guha, Ph.D., D.Sc. (Lond.) (University College of Science & Technology).
2. Mr. J. N. Lahiri, M.Sc. (Cal.) (Bengal Chemical & Pharmaceutical Works Ltd.)
3. Dr. I. B. Bose, Ph.D. (Berlin), (Biochemical Standardisation Laboratory).

The scope and functions of the sub-committee were then discussed. As there were six other sub-committees functioning simultaneously, it was difficult to demarcate the ground that this particular sub-committee should cover without encroaching on the province of discussion of the other sub-committees and duplicating the work. It was, however, realised at the very outset that a certain amount of overlapping was bound to occur, as the problems pertaining to the manufacture and production of drugs and pharmaceuticals were intimately dependent on the development and progress of heavy chemical industry dealing for example, with the acid and alkalie industries, coal-tar derivatives etc., as also on the availability of minerals, agricultural and forest products etc. The sub-committee however decided to confine their efforts as far as possible towards indicating the various requirements of the pharmaceutical industry, pointing out the sources of raw materials from the vegetable, mineral and animal kingdoms, from which drugs could be manufactured. The difficulties of manufacture, the high standard of scientific accuracy and care needed in the production of certain types of medicaments, the economics of manufacture and similar other matters relevant to the subject under consideration, were also to be discussed and suggestions which were likely to be of value to the special committee would be given in the Report, wherever possible.

5. The sub-committee held 5 sittings officially at the premises of the Indian Chemical Manufacturers' Association. Several informal discussions amongst the individual members were also held at the School of Tropical Medicine, Calcutta. The Chairman requested all the members of the sub-committee including the co-opted members to submit memoranda on different aspects of the problem in which they had firsthand knoweldge and experience. He drew up a skeleton memorandum with the help of the Secretary which formed the basis of discussion at the meetings. The points raised in the Chairman's memorandum were considered and the lines on which the final draft of the report was to be prepared were discussed. Dr. H. Ghosh, Prof. B. C. Guha, Dr. B. N. Ghosh, Dr. U. P. Basu and Mr. J. N. Lahiri submitted their memoranda in due course and necessary information contained therein has been incorporated in the Report. Inquiries were also addressed in various directions by individual members for reliable and authentic information.

6. **Acknowledgement:**—The Chairman wishes to place on record the very considerable help he has received at every stage of this work and in drafting the report from Dr. B. Mukherji, the Secretary of the sub-committee and from Dr. I. B. Bose. The Secretary of the Indian Chemical Manufacturers' Association, convened the various meetings and made all arrangements for record of the proceedings. He also addressed many enquiries on behalf of the sub-committee. The Chairman also wishes to record his deep sense of appreciation at the ready collabora-

tion he has received from all the members of the sub-committee who ungrudgingly gave their valuable time for the work of the sub-committee.

PART II.—REPORT

A. Present status of Drug and Chemical manufacture in India.

7. The sub-committee first reviewed the present status of drug and chemical manufacture in India with a view to determine how far this country is dependent on foreign imports. A study of the sea borne trade statistics of British Inida during the years 1937-38 and 1938-39 shows that India has been importing medicinal drugs, patent and proprietary medicines and chemicals to the extent of nearly 5 crores of rupees (see tables I and II appended)*. The other types of imported substances which should be studied in this connection are the group of total chemicals (excluding manures and medicines). The reason for this is that these chemicals form the basis for the production of medicinal drugs and for obvious reasons if any one has to depend on foreign supplies for these essential products, expansion and development is likely to be jeopardised, especially in the emergencies like the present one. All these figures indicate that the demand in India is large and that there is considerable scope for the further expansion of the drug and chemical manufacturing industry in this country.

8. The sub-committee then examined the position with regard to the manufacture of medicinal preparations at the present time in India. The total annual imports of raw drugs, patent and proprietary medicines and other preparations come to about rupees two crores. As regards the production in India, although no reliable statistics are available, from the rough estimate that was made from the personal knowledge of the members of the sub-committee, it appeared that the value of drugs manufactured in this country at the present time would be more than 50 per cent of the imports. The drug industry in India has been steadily progressing and with the availability of raw and basic materials, the manufacturers are in a position to meet the demands for medicines etc., in this country.

---

* Not Printed.

B. Medicinal Resources of India and the possibility of producing India's drug requirements in India:

9. The sub-committee then considered in detail the present position with regard to the drug resources at present available in India with special reference to the possibilities of expansion of the already existing industries and the development of new lines of manufacture.

Drugs of Vegetable Origin

10. India possesses a wonderful range of **vegetable materia medica**, as will be evident from the fact that nearly three-fourths of the drugs mentioned in the British or other Pharmacopoeias grow here in a state of nature and the remaining one-fourth can be easily cultivated in some part of the country or other. Where pharmacopoeial species do not grow, allied species are available which may be used as substitutes. In the *Appendix are given two lists, one of drugs belonging to the British Pharmacopoeia which grow in India and the second of those included in the British Pharmaceutical Codex and the Extra Pharmacpoeia, which either grow spontaneously or can be easily grown. Three maps of India showing the places where (1) poisonous plants (2) Pharmacopoeial drugs and (3) Indigenous drugs grow, are also attached at the end (to be printed). The sub-committee are definitely of opinion that if due attention is paid to the proper cultivation and utilisation of vegetable drugs, India would not only be completely self-supporting in this respect but would also be able to develop an export trade in crude vegetable drugs. Before the War, Great Britain used to obtain large supplies of crude drugs from mid-Europe, particularly from the areas which are now occupied by Germany. As these are now cut off, this is the opportune time for Indian sources to be properly organised in order to meet the deficiencies. Moreover, this field can be developed without much cost. If proper methods of identification of crude drugs and herbs, their cultivation, collection and storage are adopted under the guidance and control of the Central Government, the promiscuous distribution of inferior, unreliable and useless drugs and herbs that now exist will be stopped and the confidence of the buyers in Indian crude drugs will increase resulting in considerable economic gain.

Oils

11. **Essential Oils:**—India consumes large quantities of oils of sandal, peppermint, lavender, lemon, orange,

---

*Not Printed.

lemongrass, bergamot and nutmeg for perfumery and pharmaceutical purpose. Although the basic materials for the production of a large number of these essential oils are available in India, she imports large quantities of these and similar essences from foreign countries, as the indigenous methods of production in crude stills are wasteful and expensive. The finished products are not often upto the standard and the cost of production being high, the local products cannot compete with the imported products. If sufficient attention is paid in this direction and necessary encouragement and help are forthcoming, the essential oil industry in this country can be easily revived and put on modern basis.

12. Raw materials for the following essential oils are available in India.

(a) Oleum Anethi.
(b) Oleum Anisi.
(c) Oleum Cajuputi.
(d) Oleum Cinnamomi.
(e) Oleum Citronellae—Citronellae and lemongrass oils are even now often placed in the market in adulterated condition. Protection and standardisation of quality are all that is needed in this connection.
(f) Oleum Copaibae
(g) Oleum Eucalypti—The main difficulty in the development of this industry is the high cineole content requirement. According to B.P. 1932 eucalyptus oil should have 70 per cent cineole content while Indian eucalyptus has 55 to 60 per cent cineole. If cineole content is reduced to 55 per cent as in B.P. 1914, this industry would be developed.
(h) Oleum Gaultheriae.
(i) Oleum Janiperi
(j) Oleum Lavendulae
(k) Oleum Menthal Piperetae

Oleum Mentha—piperetae is one of the most popular flavouring agents in pharmacy and is largely in demand. Mentha piperetae or M. virdis are found scattered in many parts of India and the possibility of large scale plantation should be investigated.

(l) Oleum Pini pumilionis.
(m) Oleum Rosae.
(n) Oleum Rosmarini.

(o) Oleum Santali. This industry is already in the hands of responsible people.

(p) Oleum Terebinthimae.

13. The Government of Bombay encouraged lime plantation in Khandesh with a view to starting distillation of the **essential oil of lime** and though the produce was found to be weaker in its aldehyde contents, its lower price had found favour even in the European market. There are large orange plantations in Assam, Darjeeling and Sikkim areas and Nagpur where such manufacture of lemon and bergamot oils could be taken up with advantages.

14. **Fixed Oils:**—Almost all the fixed oils used in medicine such as almond oil, arachis oil, castor oil, hydnocarpus oil and oils of linseed and sesame are available in India. **Olive oil** may be easily replaced by arachis oil. It is well known that large quantities of this oil have during recent years been exported to Italy, where, after purifying and flavouring, it is sold as a cheaper grade of olive oil. Purified medicinal **castor oil** (cold drawn oil) is imported in fair quantities and is seldom manufactured in India, though ordinary oil used in hospitals and dispensaries is manufactured in this country. There could be no difficulty in preparing the purified oil used in medicine in sufficient quantities for the needs of India and Great Britain.

15. **Liquid Paraffin:**—The availability of liquid paraffin which is largely used in medical practice, was also considered. Practically the whole liquid paraffin or preparations containing it are imported from abroad, but since the beginning of the War, the supplies appear to be somewhat restricted. It is however suggested that the Burmah Shell Oil Co., might be in a position to produce quite a large quantity of liquid paraffin, sufficient for the demands of India and Burma.

Alkaloids.

16. Of the alkaloids commonly employed in therapeutics, India can produce stropine and its salts, caffeine and its derivatives, emetine, morphine and codeine and their derivatives, strychnine, ephedrine, quinine etc. Belladonna and Ephedra are available in large quantities in the Himalayas and **ephedrine and stropine** can be produced in almost any quantity. **Morphine, codeine** and other derivatives such as apomorphine etc., are either already being produced or can be produced at the Ghazipur Opium Factory. These can be produced by the manufacturers also but the Government do not allow private

agencies to undertake this manufacture. **Strychnine** is already being manufactured and large quantities of it are exported to Australia and New Zealand.

17. As regards **Caffeine** it can be produced from the wastes. Although India produces both tea and coffee in considerable quantities, it is indeed disappointing that caffeine is imported into this country even today, though in comparatively smaller quantities than before. About 3,825,948 lbs. of tea wastes are annually obtained in the preparations of finished tea in India and from this sufficient quantity of caffeine can be produced to meet the world requirements. The tea fluff (dust) is now made available to the drug manufacturers by the Indian Tea Association at a reasonable price and caffeine is being manufactured. But the railway freight for the transport of tea dust from the gardens to the manufacturing factories being prohibitive, it acts as a great handicap in the way of further extension of manufacture.

18. For **quinine**, India, as the rest of the world, will have to depend on the Dutch East Indies for sometime to come. India produces a limited quantity of cinchona alkaloids. Between the two plantations at Mungpoo (Sikkim Himalayas) and Nadavatrum (Nilgiris) roughly between 65,000 to 70,000 pounds of cinchona alkaloids are produced every year. The total requirements of India at the present time are over 200,000 pounds so that over 100,000 pounds at least have to be imported from Dutch East Indies. Cinchona plantations take seven to eight years to mature and therefore in the present emergency India will have to depend on the Dutch East Indies for its supply of cinchona alkaloids. The Chairman of the sub-committee has often urged the necessity of extension of the cinchona plantations in India. In spite of the advent of the synthetic anti-malarial drugs, the cinchona alkaloids will hold the field for many years to come for the treatment of malaria in this country, as these are remedies which can be used by the masses without medical supervision. The synthetic anti-malarial drugs are liable to give rise to toxic symptoms and must therefore be given under medical supervision. Large tracts of hills exist in this country where cinchona plantations can flourish and it is essential that the extension of these plantations is taken in hand without delay.

19. **Ipecacuanha:**—Ipecacuanha is a drug of very great importance to India in view of the wide prevalence of amoebic dysentery in this country. Large quantities of crude ipecac roots and also the alkaloid, emetine are im-

ported every year. Cultivation of psychotria ipecacuanha was started in the Nilgiris and at Mungpoo near Darjeeling. Later plantations were also started in Burma. Though a certain quantity of roots of fairly good quality was obtained from these sources, it was considerably below the ordinary requirements of the country. Most of the imports of crude roots come from the Federated Malay States where the ipecac plants grow extremely well. In view of the fact that ipecac plants have flourished in the plantations at Mungpoo (Sikkim Himalayas) and that it takes only two to three years for the plant to mature, its cultivation could be easily extended and India could be made self-sufficient so far as the requirements of emetine are concerned.

Glucosides

20. The most important glucosidal drugs used in medicine are digitalis, strophanthus and squill. Strophanthus does not grow in India but digitalis and squill are both now obtainable in large quantities from local sources.

21. **Digitalis:**—In India a large amount of digitalis is used every year. **D. purpurea** has long been grown in gardens in different hill stations. In Mungpoo this plant was grown but has now been given up, on account of the difficulties of drying and curing the leaves due to monsoon conditions prevalent in the district when the leaf matures. In Kashmir the plant has grown very well and at present the major portion of digitalis preparations consumed in India are prepared from the Kashmir grown leaf. Considerable quantities of digitalis tinctures and others are however, still imported from foreign countries. If more attention is paid towards cultivation of digitalis in Kashmir and other suitable areas, practically all the needs of India can be met. Work in the School of Tropical Medicine has shown that tinctures made from Kashmir grown leaves are just as potent as the imported brands of tinctures digitalis.

22. The question of production of purified glucosidal preparations of digitalis may be mentioned here. On account of the unstable nature of the glucosides of **D. purpurea** there are difficulties in the way of preparations of purified active principle for administration by mouth or by injection. The glucosides of D. lanata are however more stable and easy to purify and **D. lanata** has been successfully cultivated by the forest department of the Kashmir State in large quantities.

23. **Squill-Unginea scilla:**—is available in the Chittagong Hill tracts and other areas. Tincture of squills with a potency almost equivalent to the imported brands, has already been produced and marketed in India.

24. **Artemisia:** Many species of artemisia grow in the Himalayas but **Artemisia brevifolia** Wall which contains santonin grows fairly abundantly in certain parts of Kashmir. Artmisia has been also found growing in abundance in the Kurma valley in North West Frontier Province and the santonia content is quite good. During the last few years, considerable quantities of artemisia leaves were regularly exported to Great Britain for extraction of santonin. In Kashmir a factory has been producing santonin for many years past and it is in a position to produce sufficient quantity of santonin not only for consumption in India but also for exports to foreign countries.

Inorganic and Organic Drugs

25. **Inorganic drugs:**—Important inorganic drugs used in medical practice are:—boric acid, hypophosphorus acid, salts of ammonium (chloride, carbonate), potassium iodide, bromide, chlorate permanganate, sodium (bromide, bicarbonate, iodide, phosphate), magnesium (carbonate, oxide, sulphate). Of these alkaline salts such as **sodium bicarbonate, ammonium carbonate** etc. would be produced shortly in this country. **Magnesium sulphate** is now being produced in fairly large quantities in India and **Magnesium carbonate** could also be produced. **Bromide and Iodide salts** will be difficult to secure and India will probably have to depend on foreign supplies. **Zinc Chloride** is now manufactured though in small quantity, but the production can be increased if required. **Barium salts** which are sometimes used for radiographic purposes can be prepared in this country from the vast supply of Barytes near the Simla Hills. It appears, however, that no efforts have so far been made in this direction. **Potassium permanganate** is being produced by electrolytic method but the production capacity is not very high. The production however may be increased if special machinery is brought down from England. **Potassium dichromate** can be easily manufactured in India from chromite ore available in the Singhbhum district. This industry has now been taken up and it is expected that this line will develop further to meet the necessary demands and com-

pete with foreign products. **Kaolin (fuller's earth)** of good quality is available from Travancore. **Phosphates** are also available in small quantities.

26. A number of other inorganic drugs are already being manufactured in India but their manufacture depends upon the supply of certain essential basic chemicals from abroad. It is essential that the Government should make every effort to encourage the production of basic materials in this country and in the meantime supplies should be ensured from abroad.

27. **Special organic drugs:**—The chief source of many of these drugs such as acetone, acetic acid, acetylsalicylic acid, benzol, benzoic acid, citric acid, lactic acid, oleic acid, tartaric acid, trichloracetic acid, ether, ethyl chloride, chloral hydrate, hexamine, glycerine, amyl nitrate, urea, lactose etc., was Germany, though some of them were also obtained from the United Kingdom and the United States of America. Of these, acetone, chloroform, ether, acetic acid, chloral hydrate, glycerine and lactose are already being produced in India. There are possibilities of producing glacial acetic acid, citric acid, lactic acid, gluconic acid, etc. by adopting fermentation and biochemical oxidation processes but systematic research is necessary before further progress can be made. Citric acid and tartaric acid can be prepared from limes and tamarinds respectively, but the production would be costly and of limited quantity. Salicylic acid can be produced from oil of Wintergreen (**Gaultheria fragrantissima**) but the yield would be small and not commercially paying.

28. **Inorganic metallic compounds:**—Main preparations falling under this category include gold salts, silver compounds, inorganic preparations of mercury (mercurous and mercuric chloride, mercuric iodide), inorganic arsenicals (arsenic triiodide and trioxide), inorganic bismuth compounds (bismuth carbonate and salicylate) and lead compounds (lead subacetate). Although India is at present dependent upon foreign supplies for these materials, many of these compounds could be manufactured in this country. Copper salts (sulphate) can be prepared from Indian copper and salts of **zinc, antimony and lead** can be produced from these metals which might be available from Burma and the Federated Malay States. **As it will be difficult to secure mercury even at a high price, much progress in the preparations of its salts cannot be**

anticipated. Substitutes for **Hydrarg, subchlor** (calomel) and Hydrarg **perchlor** have to be found out which may effectively replace them, in conditions for which these are indicated.

29. **Organic Metallic compounds:**—of gold (solganol, senocrysin, etc.), silver (argyrol, protargol, etc.), mercury (novasurrol, salyrgan, mercuro-chrome ect.), arsenic (neoarsphenamine, sulphar sphenamin stovarsol, carbarsone, tryparsamide etc.), antimony (urea-stibamine group, neostibosan group, stibamine gluocoside etc.), Bismuth (trepol, bismutol, bistoval, etc.) have been prepared and are already in the market. If sufficient quantities of basic materials are available and research is properly organised, there will be no dearth of well-known remedies of the above mentioned series or their substitutes. The important chemicals required for this series are, acetanilide, arsenic acid, carbolic acid, formaldehyde, sodium bisulphite, sodium hydrosulphite, resorcinol and phthalic anhydride. Reserve stocks held in India may be just sufficient for the needs of the immediate future but in case of prolonged war it should be the duty of the Government to ensure supplies for the population of the country and this can only be done by encouraging local manufacture.

30. **Synthetic Chemo-therapeutic products:**—Synthetic chemo-therapeutic products are being increasingly used in therapeutic and a large number of hypnotics, antipyretics, local anaesthetics, antiseptics, etc., are imported into India. Various derivatives of malonyl urea used as hypnotics have been synthesised. Sodium diethyl barbiturate is the most commonly used drug of this series and attempts to synthesise it have succeeded. Sodium metal, iodine and methyl phenyl acetate are necessary for its prparation,all of which have to be imported. **Antipyretics** such as atebrin and plasmochin are claimed to have been also synthesised and trials on monkey malaria at the School of Tropical Medicine have given encouraging results. If sufficient quantities of various important chemicals be available, the manufacture of these can be easily undertaken on a commercial scale. **Sulphanilamide** and its derivatives are largely produced and are in the market. But these also depend on aniline and chlorosulphonic acid for large scale production. Ordinary antiseptics such as phenol, cresol, etc. are available from a few firms who are distilling coal tar and this could be considerably extended. But special antiseptics such as acriflavine are not available.

Coal-tar Products

31. Coal tar distillation industry has attracted little attention in India compared to other countries, mainly because its bye-product, road tar is not much used for road-dressing purposes. However, in recent years tar distillation has been undertaken by certain firms and only the following bye-products e.g. benzol (purified), toluol (purified). Benzol (commercial), pyridine (commercial), acid cresylic, crude carbolic acid and naphthalene balls are being made. Coal tar distillation industry offers immense scope for development.

Organo-Therapeutic Products

32. Most of the glandular products are being manufactured in India. The difficulty however is that the number of glands available is not sufficient to extend the production further in order to meet market demands sufficiently.

Biological products

33. **Sera, Vaccines, Bacteriophage etc.**—Prophylactic and curative sera practically of all types such as tetanus antistreptococcal, anti-meningococcus, anti-gasgangrene antitoxin, diptheria antitoxin, staphy-lococcus antitoxin, (Welchii only), anti-luptospira and anti-venom sera are already being manufactured in this country. All vaccines bacteriophage and antivirus, both for curative as well as for prophylatic use, are being prepared in this country. There is no difficulty in obtaining the raw materials for their manufacture in sufficient quantities.

Vitamin Preparations.

34. **Concentrates of Vitamin B1 and B2** — are prepared in India, but not to large extent. The usual sources are yeast, rice-polishings and wheat germ. Of these, the most plentiful in this country is the supply of rice-polishings and wheat germ (which may perhaps be obtained relatively free from bran if proper milling instructions are given). Brewer's and Baker's yeast is however not so plentiful or cheap in this country. **Vitamin A:** It is possible to prepare carotene (pro Vitamin A) from carrots or red palm oil and attempts should be made in this direction.

35. **Patent foods. irradicated milk foods etc.** The

manufacture of these articles would require a large scale organisation and there should be systematic study by manufacturers and Government. It is also doubtful whether sufficient quantity of milk etc. will be available for these preparations.

Surgical dressings, dis-infecting fluids etc.

36. **Absorbant cotton, gauze, lint bandages, jute etc.** are being manufactured in this country. **Dis-infecting fluids** of the type of phenol, cresol, etc., are being prepared in very small quantities from coal tar distillation but their manufacture can be quickly extended. Most of the **Surgical instruments** are also being manufactured in this country and difficulty in this connection should be anticipated. Catgut is an essential requirement of surgical practice but this is not produced in India. As raw materials for this product are available in India, attempts should be made for producing the same.

Miscellaneous requirements.

37. Apart from the requirements detailed above, there are quite a numbr of important accessories which are widely used in the drug manufacturing industry. Thus, in the manufacture of sera, vaccines and other biological products, **filter papers and filter pads** (Seita pads) are essential. These have to be procured from outside. As the stock of this is already running short, the Government should take steps to obtain the same. **Glass bottles, phials** and other containers for the storage and distribution of injectibles and other preparations are usually imported. Already attempts are made by some glass manufacturers in this direction but the supply is not commensurate with the demand. It is however possible that the manufacturers would be able to meet the demand of good quality glass in future. **Velvet corks** for medicine bottles are imported from Spain. As there is no substitute for these in India supplies should be ensured. **Rubber tubes** have to be imported either from Great Britain or U.S.A. This is also a very important and necessary accessory for the drug industry. This can be produced in India.

C. Dependence of Drug Industry on certain Chemical Industries and the need for thier development.

38. After surveying the medicinal resources of the country in extenso, it became apparent that for the continuance of the manufacture of many of the existing items

and for undertaking the manufacture of newer items which are now being largely imported it is necessary first to ensure the production of certain basic heavy chemicals such as acids, alkalies, solvents coal tar and derivatives etc. If these are developed, it will ensure the continued growth and progress of the drug manufacturing industry in this country. The possibility of producing these materials in India is being examined by other sub-committees. This sub-committee however desire to refer to a few items requiring urgent consideration.

39. **Sulphuric acid** is a very essential material. Production of this acid in India depends upon the supply of sulphur which has to be imported and it is absolutely necessary that the **sulphuric acid manufacture should on no account be allowed to be crippled or even to suffer for want of supply of sulphur.**

40. **Benzol** or commercial benzene is an important solvent which is much in demand. Benzol is now produced in sufficient quantity in India, but the Government of India have imposed an excise duty of Re. -|10|- (annas ten) per gallon on this commodity on the ground that benzol can be used as motor spirit as a substitute for petrol. This fact has prevented the manufacture of this product in coke oven factories and consequently enormous quantities of benzene are going to waste. If this duty is removed, it, will be of enormous advantage to the country in general and to the drug industry in particular.

41. **Petroleum ether:** Though ether (sulphuric) is largely employed as a solvent in the drug industry for defatting purposes, petroleum ether is sometimes preferable and in some cases galenicals of the B. P. quality cannot be produced without the use of this solvent. The Government should help the drug manufacturing industry by making available the required quantity of this material at a reasonable price. Petroleum refineries in Burma produce a certain amount of this solvent and its production could with great benefit be increased during this emergency.

42. **Chloroform:** Limited quantities of chloroform of B. P. standard are being produced in India from bleaching powder. The manufacture of chloroform is not taken up on a large scale, as due to high prices of bleaching powder, the cost of production of chloroform is high and it does not therefore become a business proposition. If cheap and adequate supply of bleaching powder is available,

there is no reason why chloroform cannot be produced in large quantity.

43. **Special chemicals, etc.** Glucose and lactose are used in medicine in enormous quantities. The manufacture of glucose is dependent on the production of starch. There are only two or three factories which are producing starch in India but there is enormous scope for further development. **Glucose** has not so far been produced in India in sufficient quantity and it is doubtful whether it would be possible to produce it successfully in near future due to foreign competition. As regards **Lactose** it might not be produced on a commercial scale due to shortage of milk in this country. **Camphor** is not obtainable from indigenous sources but is imported from Japan and Germany. Attempt was made to produce synthetic camphor from Indian turpentine and it may be possible to develop this industry in near future. **Papain.** This enzyme is being gradually more and more used in medicine. Plantation of carica papaya has been started in some districts of Bengal and papain manufacture has already been taken in hand by certain manufacturers. **Diastase** of required strength and quality is being manufactured in large quantities by several Pharmaceutical concerns in this country. **Gelatin** is not manufactured in India as it is not considered by manufacturers as a feasible proposition due to small demand. **Bile salts.** These have already been successfully purified from ox-bile and have been placed in the market. **Peptone** is being manufactured by some concerns on a small scale to meet their own consumption. There is no market in India for this material.

General Remarks and Observations.

44. From the enquiry into the various problems of drug manufacture and production in India, it becomes apparent that the drug and pharmaceutical industry in India has developed considerably recently and in order to enable it to make further headway, simultaneous growth of heavy and fine chemical industries and industries connected with coal carbonisation and production of solvents etc. is essential. If the required basic materials and chemicals are readily available, it is possible to produce in India all the drug requirements of the country.

45. The position at the present juncture is very much better than it was in 1914-18. The technical knowledge and most of the resources are available in this

country. In certain cases, some preliminary research would be necessary to work out the manufacturing methods in detail. This would also often involve the testing out of the processes elaborated in the laboratories in pilot plants. This means expense, which many of our industries cannot afford. If, however, there is co-operation between the Universities, State Research Institutions and Industries, these problems can be successfully tackled.

46. We would here invite the attention of the Government to the necessity of close co-operation between the drug manufacturing concerns and hospitals. At present the manufacturers find it difficult to make a clinical trial of any product, however chemically and biologically tested, in any hospital under Government and semi-Government bodies. In other countries this facility is available to the manufacturers, but the want of co-operation from the authorities of hospitals in India is a great handicap in the way of progress of the Pharmceutical industry. It is essential that the State should render all the necessary help in this respect.

47. The Government should provide adequate protection to many of the key and subsidiary industries particularly at the formative stages, if the drug industry has to flourish in India and withstand foreign competition. Very little encouragement has still recently been given by the Government to existing industry for the production of a large number of medicinal drugs in this country. There is no lack of enterprise if protection is given by the Government and after the cessation of war their products are protected from unfair foreign competition.

S. R. Dhadda.
(Secretary, Indian Chemical
Manufacturers' Association.)

R. N. Chopra (Chairman)
J. N. Lahiri.
H. Ghosh.
B. N. Ghosh.
U. P. Basu.
B. C. Guha.
I. B. Bose.
B. Mukherjee (Secretary).

Dated the 17th June, 1940.

"PLANNING FOR A NEW INDIA"—"THE FOOD OF THE PEOPLE"

by

LT. COL., S. S. SOKHEY, I.M.S.

Broadcast Talk given on Wednesday, 14th March, 1945,

Planning is a social activity of the utmost importance. But we must understand the full implications of planning if we are to achieve any worth-while results. Take the problem of food. The production of people's food cannot be planned by itself. It can only be made a part of a general plan designed to meet all the physical and cultural requirements of a people as a whole. The production of food, house, books, hospitals, railways, roads, theatres, etc., can all be planned together but not separately. The reason is obvious. Planning means the careful assessment of the available resources of the country, and their allocation, on a priority basis, to produce those items in adequate quantities which are needed for the economic, social and cultural betterment of the nation as a whole. Such a programme would have also a long-term point of view and would naturally plan to improve and develop the resources of the country to enable it to produce more and more with the specific object of making the life of the people more worth-while and culturally satisfying. If things are looked in that light, it becomes apparent that when the total production of the country is planned, as indeed planning can have meaning only if it covers total productivity, we are likely to find that the productive resources of the country are far too meagre to produce all things that the various people desire. Thus production, specially at the start, would have to be limited to those things that are considered essential necessities for the general welfare of the people. A large number of things which are luxuries and can be done without, especially over short spans of time, would not be permitted to be made until the means of production increases adequately.

Planning, thus, is not an exercise in designing on paper utopias complete in every detail. Planning is an executive function, and can be discharged only by the Government of the country. Planning goes on by doing, action does not have to wait on blue prints complete in every detail. Certain broad tentative decisions require to be taken and priorities assigned, and action started. In the process of implementing the more urgent portions of the scheme, details emerge and the plan makes itself as it goes along and is continually corrected in the light of experience. However two conditions are imperative. Firstly, that all the planning must be in the hands of one commission or one executive department of Government and this commission must be drawn from the best scientific, technical and administrative ability of the country and must be imbued with the highest human motives. Secondly, the people must be whole-heartedly behind the plan. To make a success of it, not only every individual has to give the plan the best in him, but has to suffer hardships gladly and make sacrifices in the interests of the people as a whole. This second condition demands that plan of action should be fully and fairly explained to the people from time to time and discussion continually encouraged.

When we come to the specific problem of the planned production of food, the questions are what to produce, how much to produce and how to integrate food production with other production.

The question of what to produce we all can easily answer. These days of scarcity of food have set us all looking into books on nutrition, and have made us hear talks on what to eat to maintain health. We all know the importance of milk, eggs, green-leafy vegetables and fruit as protective foods: the superiority of animal proteins such as are contained in eggs, milk, meat and fish over proteins of vegetable origin: the role vitamins play in maintaining health and we remember that the vitamins required by the body can best be had by eating the right kinds of food-stuffs rather than by swallowing expensive tablets which do benefit only to the shareholders of chemical firms. We also know that a certain amount of fats of animal origin or oils are essential for the well-being of the body. When these essential requirements have been met, we can add to the diet a suitable amount of cereals to bring its total energy producing value, usually measured in calories, to suit the energy requirements of an individual according to his physical work. We also generally know that when a meal is made by free selection from a very wide variety of food-stuffs, the diet is generally well-balanced, unless of course, the selection is vitiated by bad eating habits or silly prejudices.

But when the income of an individual is meagre, as is the case with the largest proportion of our people, the choice of food-stuffs goes by their cheapness and is certainly not very varied. This circumstance sets us thinking in terms of minimum requirements of food-stuffs for maintaining health. And for the present we must accept them as our working conditions. Nutrition Advisory Committee of the Indian Research Fund Association has, in the light of existing knowledge, drawn up a tentative scale which indicates the very minimum of food for the maintenance of health. Here are the quantities they suggest for an adult per day:

Cereals	14 oz.	Milk	10 oz.
Pulses	3 oz.	Sugar and jaggery	2 oz.
Green leafy vegetables	4 oz.	Vegetable oil, ghee, etc.	2 oz.
Root vegetables	3 oz.	Fish and meat	3 oz.
Other vegetables	3 oz.	Eggs	1 egg
Fruits	3 oz.		

It will be noted that the Nutrition Advisory Committee recommends only 14 ozs. of cereals per day in place of the usual quantity of 16 ozs. This is due to the fact that they call for an increased amount of milk, fish, meat and eggs and pulses, which more than make up for the reduced amount of cereals. From the nutritional point of view, major portion of the body requirements should not be derived from cereals. Food-stuffs like milk, fish, meat, eggs, green leafy vegetables are a better source of nutrition. Here again attention must be drawn to the fact that some cereals are more nourishing than others, wheat is distinctly better than rice. When a person does not eat eggs or meat, he should consume more milk, milk products and eat increased amount of pulses which have a high protein content and are a good source of vitamin B.

The quantity of 10 ozs. of milk per day suggested by the Nutrition Advisory Committee is obviously low. They themselves were not satisfied with this low figure and suggested that it may be taken as a practical objective to be reached in a short period. When conditions improve the quantity of milk will have to be increased, and brought into line with the commonly accepted standard of 20 ozs. per adult per day. Infants and children require more of protective foodstuffs, particularly milk, than adults.

This is as far as the needs of an individual go. But what about the nation as a whole? The total requirements can be easily calculated by the process of multiplication. But how much do we produce, we don't exactly know. Until recently it was nobody's business to see that food-stuffs were produced in adequate quantities to meet the needs of the people, nor was it anybody's business to see that the people were properly nourished or were even tolerably healthy. Those were the bad old days of laissez-faire. Since the war has made it imperative to husband all our resources and we have begun to take notice of things we have come to realise that adequate quantities of food-stuffs are not being produced in the country and that the people are very badly nourished. This realisation has woken up Government to its wider sphere of duty, we now have rationing and a concerted effort to meet the food requirements of the people. The knowledge thus gained brings into prominence the question whether uncontrolled private enterprise can be left in charge of the production and distribution of essentials of life. The answer is obvious, and I feel sure, Government control of production and distribution of at least food has come to stay.

When we come to the actual planning of production of food we find that it is a complicated affair. So many different things must be attended to, to achieve results. We must have suitable irrigation, conservation of soil, agricultural implements, chemical manures and cheap power. Planning of irrigation immediately brings in the question of water resources and their suitable utilisation not only for irrigating land, but also at the same time for producing cheap electric power and for making rivers suitable for navigation, if possible. Similarly, the production of chemical manures demands the planning of chemical industry, and the fabrication of agricultural implements requires the planning of steel industry. In other words, agriculture can be planned only along with the planning of industry. The two must go hand in hand complementing each other.

Planning of agriculture also brings in the problem of tenure of land. At present agricultural land is divided up into small patches which are not large enough to absorb the full labour of a peasant. This all will have to go and the land will have to be parcelled into tracts of suitable size, to permit of economic development. Then also the question will have to be settled whether the land is to be collectively exploited or used as private individual property. Whatever we do, we have to see that human labour brings in the maximum possible return. Connected with the same question is the problem of deciding by some central authority as to how much land is to be given over to the production of food and how much to commercial crops. Under the impluse of private profit motive more and more land tends to be utilised for the production of commercial crops, because such crops bring in a higher monetary return. But under planned economy such vital questions cannot be left to individuals to decide as they like.

So far you have perhaps gained the impression that planning means essentially planned production, but that is not the case. Planned production automatically means planned distribution. We cannot plan to produce any given commodity without planning how it is going to be used and by whom; and above all the whole idea of planning is to better the cultural life of the people and that object must call for very careful planned distribution, so that the means for making life better are put at the disposal of every individual. So far the only method of distribution that we have known is through the medium of wage. Every worker is given so much of money every week or month for his labour and he is expected to meet his needs as best as he can. The National Planning Committee, which reported just before the war, calculated the average income at Rs. 5|- per head per month. The Bombay plan published more recently accepted that figure as more or less correct even today. Such a low income is totally inadequate even to provide adequate amount of food, what to say of other requirements such as clothing, housing, etc. The quantity of food considered by the Nutrition Advisory Committee as the minimum requirements per head would alone cost over Rs. 12|- a month, while the income to purchase it with amounts to no more than Rs. 5|- a month. This low average income is largely due to the very low agricultural income. So the planning must take care of this salient feature of the present economy. We cannot rectify the position by merely giving more to the peasant than he produces. We have got to make his labour more productive. The same man sitting behind a machine in a factory produces much more than he can by the same amount of labour on his farm under primitive conditions of work. This problem of stepping up the wage of a worker on land has always proved a very difficult one to solve. But there is no doubt now that it can be done. The solution of the problem demands gradual and intensive mechanisation of agriculture, to make a peasant's labour as productive as that of a factory worker. This naturally means that, as the mechanisation of agriculture proceeds, more and more men will be taken off land and employed in factories. The extended use of machinery should cause no alarm. Whether the effects of mechanisation are good or bad depends almost entirely on whether it is used for the betterment of men or for making private profits.

Planning of Food for the people, then, means, planning the total productivity of the country and making agriculture an integral part of it. Such a plan must attend to the problem of increasing the yield from land per unit of human labour. This can be done only by mechanising agriculture. Mechanising of agriculture need cause no apprehension. Machines used deliberately for the betterment of men are a vastly different affair to their exploitation for private gain.

Resolutions of the National Planning Committee on the Report of the Sub-Committee on National Health.

The Interim Report of the Sub-Committee on National Health was presented by the Chairman, Col. S. S. Sokhey, on the 30th August, 1940. Dr. J. S. Nerurker, Secretary of the Sub-Committee, was also present. Discussion continued on the 31st August, and the following Resolutions were adopted:—

1. For the purpose of raising the standards of public health in the country, and for the prevention of disease, it is essential that dietary standards should be substantially raised and made adequate and better balanced. In this connection, the N.P.C. notes the specific recommendations of the Sub-Committee, and resolves that they be placed before the National Planning Commission.

Note: — The specific recommenadtions are that the dietary standards laid down by the Technical Commission of the Health Committee of the League of Nations, with a permissible reduction of 8 per cent, be accepted for India. These provide a basic diet of 2,400 calories for an average adult, with suitable additions proportioned to the nature and strain of the work.

2. India should adopt a form of health organisation, in which both curative and preventive functions are suitably integrated, and administered through one agency.

3. Such an integrated system of health organisation can be worked only under State control. It is, therefore, recommended that the preservation and maintenance of the health of the people should be the responsibility of the State.

4. For the proper functioning of such an organisation, medical and health research in the widest possible field is essential. This research should, therefore, form an important function of a Health Organisation; and this should include the application of the scientific method for the investigation of the indigenous and other methods for

the maintenance of health, and the prevention and cure of diseases.

5. In view of the paucity of qualified medical men and women in the country, it is necessary to increase rapidly and substantially their number. For this purpose it is necessary to organise a large number of training centres.

6. In addition to the above, and as an immediate step in order to meet the special conditions prevailing in India, we recommend the training of large numbers of Health Workers. These Health Workers should be given elementary training in practical, community, and personal hygiene, first aid, and simple medical treatment, stress being laid on the social aspects and implications of medical and public health work. There should be one Health Worker for every thousand of the population, and this number should be attained within five years. Selected Health Workers should be given further training at suitable intervals so that they might be better trained for this service.

7. There should be ultimately one qualified medical man or woman for every 1,000 of population, and one bed for every 600 of population. Within the next ten years the objective aimed at should be one medical man or woman for every 3,000 of population, and a bed for every 1,500 of population. This should include adequate provision for maternity cases.

8. The medical and health organisation should be so devised and worked as to emphasise the social implications of this service. With this object in view the organisation should be made a free public service, manned by whole-time workers trained in scientific method. To give effect to this aim, a Chair should be established in every medical school for special training in the social or service aspect of Medicine and National Health.

9. Adequate steps be taken to make India self-sufficient as regards the production and supply of drugs, biological products, scientific and surgical apparatus, instruments and equipment, and other medical supplies.

10. A Pharmacopoeia Committee should be appointed to draw up an Indian pharmacopoeia. In order to carry out this object adequately, research should be particularly

intensified to determine the action of drugs traditionally used in India.

11. No secret remedies, or remedies whose exact composition is not stated on the labels of the containers in the clearest possible terms, should be allowed to be sold.

Proprietary remedies whose composition is clearly indicated, may, however, be allowed to be sold under proper State supervision.

12. No individual or firm, Indian or foreign, should be allowed to hold patent rights for the preparation of any substances useful in human or veterinary medicine.

The State should encourage and endow research and suitably recognise and reward those who achieve successful results.

Note:—Mr. Ambalal Sarabhai is of opinion that such patents should be treated on the same basis as copyright in books or industrial patents.

13. An attempt should be made to absorb the practitioners of the Ayurveda and Unani systems of medicine into the State health organisation by giving them further scientific training where necessary. Medical training in every field should be based on scientific method.

Note:—Mr. Nanda was of opinion that other systems, such as homoeopathy and naturopathy, should also be included in this by the addition of the words "and other systems." It was pointed out, however, that no exclusion was intended in the resolution but stress was laid on the necessity of the scientific method and training.

SUMMARY OF DEVELOPMENTS

The War was very prolific in suggesting and enforcing measures for promoting and maintaining Public Health, thanks mainly to the stationing of large numbers of American troops in this country, in whose interests, primarily, those measures were introduced. Their introduction as part of the National Health Organisation for this country has, however, in many cases yet to be achieved. The invention and widespread use of such insecticides as the D. D. T. effectively destroying malaria mosquito; or of penicillin and sulpha drugs, have come into greater practical use. But their regular acceptance as integral part of the everyday medical use in treatment remains to be accomplished. Developments in bolder and more painless surgery, and greater attention to preventive methods by prophylactics or inoculation, are other feature, in line with the tendency already observed before the war. A mere list of such developments, — fruits of endless world-wide research, — as outlined in such popular periodicals as Science Digest, would make formidable reading and often miraculous achievement.

The growth and manufacture of indigenous drugs on a large scale, as in the Drug Research Laboratory at Jammu and Srinagar, Kashmir; and the recognition of the vital importance in the allover Plan of national development, with a view to attain self-sufficiency, is rapidly gaining ground. And if the industry needs State protection or encouragement, the reorganised Tariff Board is certain to grant it. The closer knitting together of the countries of the world in regard to the safeguarding of public health and medical research, by international agreements and local legislation against the spread of infectious disease, like Smallpox or Cholera, — is reflected in India's membership of the International Health Organisation, — and her treaties in regard to Quarantine, Port Regulations for the same purpose, and the like. Within her own frontiers, also, fuller perception of the obligation of the community towards its members for providing an adequate medical service, professional advice, nursing attendance, and the like, is evidenced by the most recent legislative proposals, regulating or organising the Dentist Profession, the Nursing Council and Pharmacists.

On the organisational side, the abolition of the military taint from the Indian Medical Service, and the amalgamation of the Medical Service with the Health Service into a single Central Office of the Director-General of Health Services, — the Director-General being also Secretary to the Ministry of Health, — helps to coordinate policy and facilitate general supervision and control of measures directed to promote public health, which must help economy as well as efficiency in working. The introduction of compulsory Health Insurance System for certain class of workers is the beginning of a much wider and more far-reaching Health Service that must be no mean part of the overall Plan.

On the educational side, the number of Colleges of Medicine has increased, while the enforcement of compulsory physical training in schools and colleges has become much more common. The spread of general education of the public as well as of the medical and nursing professions, though appreciable, is not at all in proportion to the needs of the country and its teeming population. The wide gaps in such matters have been noted in the Introduction; and it must be amongst the first aims of an allround Plan to promote and safeguard the national health to fill up these lacunae, or make up those deficiencies.

The measures and policies, however, noted so far make **ad hoc** developments, which are not scientifically inter-related as in a Plan. To be fully effective on the widest scale, they must be carefully coordinated and integrated into a countrywide policy, organisation and administration. It is for this reason that the Committee on Health Survey and Development, appointed in October 1943, under the Chairmanship of Sir J. Bhore, with the widest terms of reference, is of the utmost significance. It was a fully representative body, consisting of nine officials, including a Minister of Health, Director-General of Indian Medical Service, and some Surgeon- Generals from the leading Provinces; and 16 non-officials, including private practitioners of international reputation and members of the Central Legislature. The Committee had also the advantage of discussing its problems with certain distinguished workers in the field of health from the United Kingdom, the United States of America, the U.S.S.R. and Australia, who came to India for this purpose on the invitation of the Government of India.

Existing Health Conditions

The Committee's survey of existing health conditions and of the factors associated with them reveals India's rate of mortality to be at least double that of most civilised countries, while her infantile death rate is about five times that of Australia and New Zealand. The commonest causes of such a state of public health are the unhygienic conditions under which people live, mal-nutrition and under-nutrition, inadequacy of existing health services, and illeteracy as well as certain social customs like early marriage, and the 'pardah.' Food production in the country falls short of its requirements by about 20% to 25% in respect of cereals, — the main article of diet of 80% to 90% of the population; while the production of other articles, e.g. milk, fruits, vegetables, meat, eggs and fish, will have to be increased many times before the needs of the country can be adequately met.

In putting forward its recommendations the Committee kept in view certain objectives. They are:—

(a) The organisation, when fully developed, should provide each individual in the country with adequate medical care, curative and preventive, — irrespective of his ability to pay for such services.

(b) The medical aid available to the rural population is much less than in urban areas, and should, therefore, receive much more attention than has been given to it hitherto.

(c) Active cooperation of the people should be enlisted in the development of the health programme, partly through the provision of facilities for participation by the people in local health activities and partly by wider general education of the people, and spread of knowledge and information on the elements of hygiene and the use of specifics.

Taking these objectives into consideration the Committee has drawn up a long-term programme, which will provide a modern health service for the country based on the newer and expanding conception of modern health practice. The district health organisation will have, as its smallest unit of administration, a Primary Unit which will normally serve a population of 10,000 to 20,000. About 15 to 20 such Primary Units will together constitute a secondary unit; and a varying number of the latter (3 to 6) will form the District Health Unit, the designation suggested by the Committee for the district health organisation.

At each of the headquarters of the district, secondary and primary health units will be established, a Health Centre from which will radiate the different forms of health activity into the territory covered by each type of unit. The provision made for medical relief and preventive health work at each of these Health Centres will increase in scope and efficiency from the primary unit to the District Health Unit.

The District Health Centre will possess general and special hospitals with a total of about 2,500 beds, and all the consultant and laboratory services required for the diagnosis and treatment of disease on up-to-date lines. The secondary health unit will have a hospital with 650 beds, and the primary unit headquarters a 75 bed hospital.

A system of ambulances and telephone connections between these three types of hospitals will help to promote the fullest utilisation of the higher types of service available at the larger institutions by the people living in the remoter parts of the district.

These hospitals will also take an active part in the preventive health campaign. They will be linked with the field health organisations in respect of such services as those for tuberculosis for mothers and children, or for venereal disease, in order to ensure that the remedial and preventive health work carried out in the homes of the people receive the full benefit of the treatment and diagnostic facilities available at the hospitals.

The Committee has stressed that, to produce maximum results, preventive and curative health work should be dovetailed into each other; and suggested extensive changes in the existing training programme for doctors. Emphasis has been laid on equipping them for preventive health work. It has also made elaborate proposals for a considerable expansion of training facilities for the different types of other health personnel required for meeting the country's needs.

It has been made plain that no Health Development Plan can produce adequate results unless sufficient measures are taken for the provision of a healthy environment for community life, e.g. safe water supply, hygienic houses, a satisfactory system of conservancy, and proper supervision over the production, distribution and sale of food intended for public consumption. Specific recommendations have been put forward in respect of these.

In order to secure the active support of the people, the establishment of a Health Committee in every village has been recommended. Such Committees are intended to stimulate local effort for the improvement of environmental sanitation, control of infectious disease, and the steady development of a programme of health education.

In order to ensure a rapid improvement of the public health, the Committee recommends a coordinated advance on a broad front as essential, and that the schemes put forward, the betterment of community life in all its aspects by various post-war committees, should be implemented simultaneously with its own health plan.

A fuller notice of the main proposals of this Committee will make interesting reading:—

"If it were possible to evaluate, with any degree of exactness; the loss India suffers annually through avoidable waste of human material, and the lowering of human efficiency through mal-nutrition and preventible morbidity, the result would be so startling as to arouse the whole country and create and enlist an awakened public opinion in support of the war against disease. According to one authority, the minimum estimate of the loss to India every year from malaria alone lies somewhere between 147 and 187 crores of rupees.

In drawing up a health plan, certain primary conditions, essential for healthful living, must in the first place be ensured. Suitable housing, sanitary surronudings and a safe drinking-water supply are pre-requisites of a healthy life. The provision of adequate health protection to all covering both its curative and preventive aspects, irrespective of their ability to pay for it, the improvement of nutritional standards qualitatively and quantitatively, the elimination of unemployment, the provision of a living wage for all workers and improvement in agricultural and industrial production and in means of communication particularly in the rural areas, are all facets of a single problem and call for urgent attention. Nor can man live by bread alone. A vigorous and healthy community life in its many aspects must be suitably catered for. Recreation, mental and physical, plays a large part in building up the conditions favourable to sound individual and community health and must receive serious consideration. Further, no lasting improvement of the public health can be achieved without arousing the living interest and enlisting the practical co-operation of the people themselves

Health Programme

We have drawn up our health plan in two parts, one a comprehensive programme for the somewhat distant future, and the other a short-term scheme covering two five-year periods. We have taken the countryside as the focal point of our main recommendations for the debt which India owes to the tiller of the soil is immense.

The Long-Term Programme

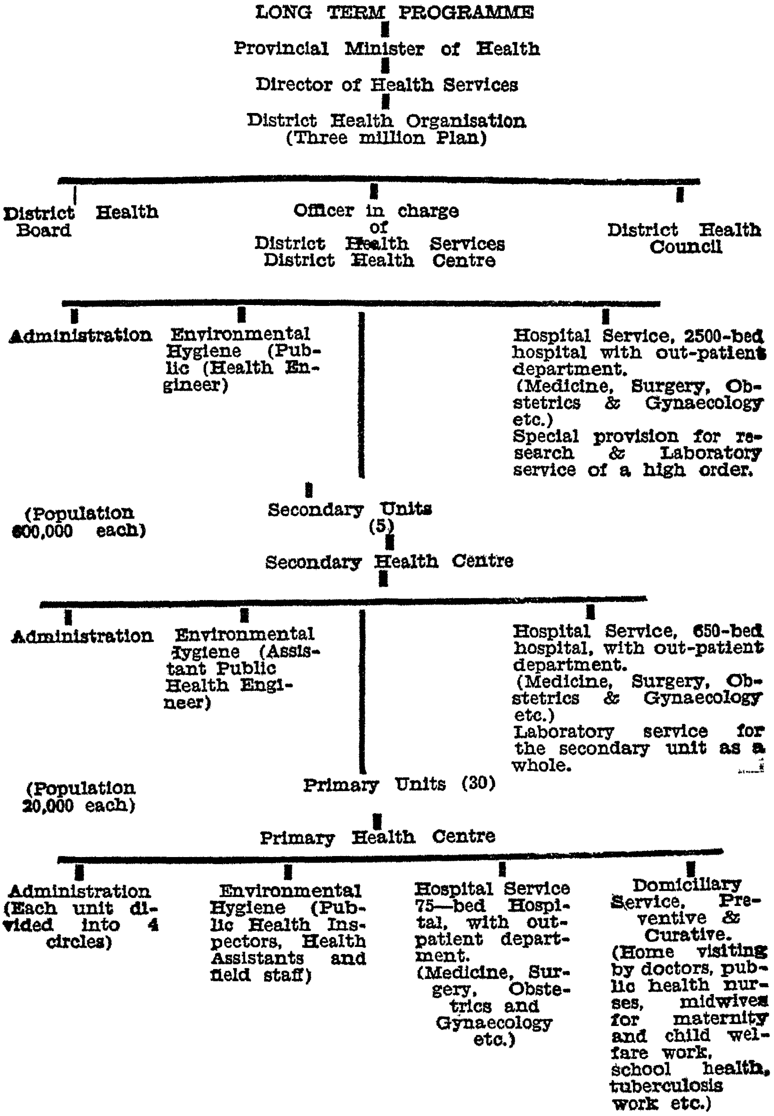
The large variations that exist in the density of population in different parts of the country make it impossible to formulate a plan which can be applied without modification over all the Provinces. The desirability of associating the activities of the proposed health organisation with those of other Departments of Government such as

Agriculture, Education, Animal Husbandry and Co-operation, has been recognised. It is, therefore, considered advantageous that, as far as possible, the administrative district should be chosen as the area for the development of the scheme. The populations of individual districts vary conisderably from over five millions to a few hundreds of thousands, or even less, in some cases. In presenting the plan, therefore, an arbitrary figure of three millions for a district has been chosen.

The Three Million Plan

The district health organisation will have, as its smallest unit of administration, the primary unit, which will normally serve an area with a population of about 10,000 to 20,000. A number of such primary units (about 15 to 25) will together constitute a secondary unit, and a varying number of the latter (about 3 to 5) will form the District Health Unit. At each of the head-quarters of the district, secondary and primary units will be established a Health Centre as a focal point from which the different types of health activity will radiate into the territory covered by each type of unit. The District Health Centre will possess general and special hospitals with a total bed strength of about 2,500, and all the consultant and laboratory services required for the diagnosis and treatment of disease on up-to-date lines. The administrative staff of the district health organisation will be located here and will exercise supervision over the district as a whole. Similarly, the Secondary Health Centre will be provided with hospital accommodation of about 650 beds, and with equipment and other facilities on a generous scale, although not up to the standard of the District Health Centre. The administrative staff of the secondary unit will be attached to the Secondary Health Centre, and will exercise supervision and control over the primary units included in it. The Primary Health Centre will have a 75-bed hospital and health administration over the area included in the primary unit will radiate from this Centre.

The District Health Organisation described above and its functions are shown below in diagrammatic form:—



LONG TERM PROGRAMME

Provincial Minister of Health

Director of Health Services

District Health Organisation
(Three million Plan)

District Health Board

Officer in charge of District Health Services District Health Centre

District Health Council

Administration

Environmental Hygiene (Public (Health Engineer)

Hospital Service, 2500-bed hospital with out-patient department.
(Medicine, Surgery, Obstetrics & Gynaecology etc.)
Special provision for research & Laboratory service of a high order.

(Population 600,000 each)

Secondary Units (5)

Secondary Health Centre

Administration

Environmental Hygiene (Assistant Public Health Engineer)

Hospital Service, 650-bed hospital, with out-patient department.
(Medicine, Surgery, Obstetrics & Gynaecology etc.)
Laboratory service for the secondary unit as a whole.

(Population 20,000 each)

Primary Units (30)

Primary Health Centre

Administration (Each unit divided into 4 circles)

Environmental Hygiene (Public Health Inspectors, Health Assistants and field staff)

Hospital Service 75—bed Hospital, with out-patient department.
(Medicine, Surgery, Obstetrics and Gynaecology etc.)

Domiciliary Service, Preventive & Curative.
(Home visiting by doctors, public health nurses, midwives for maternity and child welfare work, school health, tuberculosis work etc.)

The medical officers in charge of the Departments of Medicine, Surgery etc. in the hospital at the Secondary Healh Centre will, in addition to their hospital duties, supervise work in their respective fields in the hospitals in the primary units. The corresponding staff in the hospital at the district headquarters will similarly supervise the work of the different departments in the secondary and primary health centre hospitals. Close and continuous guidance through advice and supervision, which should extend even to the remote villages, is fundamental to the success of the scheme.

The Primary Unit

Each primary unit will have six medical officers, six public health nurses, and a 75-bed hospital with the requisite nursing staff. All these should be utilised for organising a combined curative and preventive health service in the area. Over and above the hospital nursing staff, there are provided six public health nurses, who should be qualified nurses with training in midwifery and, in addition, in rural health work in its preventive and remedial aspects. Of these, four maybe put on to preventive work in the homes of the people. Each nurse so engaged should be able to deal with the health of school children, the welfare of mothers and children, tuberculosis work, and other activities in the houses within her area of jurisdiction. The remaining two public health nurses and two medical officers will be available for organising and carrying out curative treatment in the homes of the people.

The Secondary Unit.

The staff employed in a secondary unit will be considerably larger than that of a primary unit. The Administrative Officer at the headquarters of the secondary unit will be responsible for the supervision and coordination of all curative and preventive health work in the whole area supervised by the secondary unit. There will be whole-time heads of the different departments of medicine, surgery, maternity, tuberculosis and pathology at the secondary unit hospital, and they will perform the dual function of attending to the duties of their respective sections in the hospital and of inspecting periodically similar work carried on in the primary unit hospitals.

In addition to these, the secondary unit provides for two senior public health nurses, and two senior sanitary inspectors, who will be responsible for supervising the work of the corresponding officers in primary units. There is also an Assistant Punblic Health Engineer for supervising all activities in connection with environmental hygiene.

The District Headquarters Organisation

The provision for medical relief at the District Headquarters is on a much larger scale than at a secondary unit. The number of beds in the hospital is 2,500, and the numbers of medical officers and other personnel employed are considerably greater than in a secondary unit. The provision of 2,500 beds need not necessarily be made in one large institution. These beds include provision for medical, surgical, obstetrical and gynaecological cases as well as for patients suffering from infectious diseases, mental diseases, tuberculosis and others.

The secondary unit and district headquarters hospitals will be the institutions to which the more complicated cases admitted in the primary unit hospitals will be removed.

At all the three types of hospitals (primary unit, secondary unit and district headquarter hospitals) social workers are to be employed. Their functions include, among other things, the visiting of the home of the patient in order to ascertain the causes underlying the disability for which he or she has sought the aid of the hospital and service as a connecting link between the hospital and the public in the treatment of the individual patient and the general health programme of the area concerned.

The health organisation briefly described above is expected to produce a reasonably satisfactory service for rural and urban communities alike. It is based mainly on a system of hospitals of varying size and of differing technical efficiency. Work in connection with maternity and child welfare, tuberculosis, leprosy, etc. will be carried into the homes of the people from the hospitals, the outdoor organisations in respect of each of them being closely related to these institutions. The diognostic facilities that the large hospitals will provide will also contribute their share to the preventive campaign.

By the time the long-term programme is completed the hospital accommodation available in the country will have risen from the present figure of about 0.24 bed per 1,000 of the population to 5.67 beds per 1,000. As regards health personnel, the numbers that will be required under certain catergories and those now available are shown below :—

	Numbers required for the complete programme.	Numbers now available.
Doctors	233,630	47,500
Nurses (including public health nurses)	670,000	7,500 (including existing health visitors).
Midwives	112,500	5,000
Pharmacists ..	77,880	75

The Short-term Programme

Our short-term proposals which are intended to supplement, and not supplant, the existing health services, do no more than present a general picture for the guidance of the Provinces. The plan includes proposals for the establishment of personal and impersonal health services. Under the former head we propose a province-wide organisation for combined preventive and curative health work. This will provide, for each district (1) a number of primary and secondary units, which are included in the district health unit and (2) special health services for mothers and children, school children and industrial workers as well as for dealing with the more important diseases prevalent in India, such as malaria, tuberculosis, venereal diseases, leprosy, mental diseases, and some others. The three important subjects of nutrition, physical education, and health education have been dealt with in separate chapters in volume II of our Report. Our recommendations regarding impersonal health services relate to town and village planning, housing, water supply, drainage and other matters regarding general sanitation. Specific proposals for the training of doctors, nurses and other categories of health personnel, for medical research and certain other important matters, have also been made.

The Province-wide Health Organisation

We suggest that, in view of the insufficiency of funds and of trained personnel, (1) each primary unit should cover, during the first ten years, a population of 40,000, (2) that the primary health centre should have a dispensary with two beds for maternity and two for emergency cases, instead of a hospital; and (3) that the secondary health centre should start with a 200-bed hospital to be raised, by the tenth year, to 500-beds. We also suggest that (4) the establishment of the district health centre may be postponed till after this period. The staffing and equipment of the health centres at the headquarters of the primary and secondary units will be on a reduced scale. In order to expand the existing meagre hospital facilities in rural areas we also, (5) suggest that a 30-bed hospital should be established, at the start to serve four primary units, and that, by the end of the first ten years, their number should be doubled so that one such hospital will serve two primary units.

Legislation

To give effect to their recommendations, the Committee consider it wolud be necessary to enact legislation on the following lines:—

(1) For the formulation and execution of a National Health Policy, based on the largest possible agreement between the Central and Provincial Governments, and to promote the co-ordination of central and provincial health activities.

(2) For improving health administration in the provinces, particularly the standard of such administration in local areas.

(3) For conferring special powers on health authorities to enable them to carry out their duties more effectively.

(4) For giving statutory sanction to certain proposals e.g. the establishment of the All-India Medical Institute, the Central Committee for Post-graduate Medical Education, and Central and Provincial Water and Drainage Boards.

Consolidated Public Health Acts, Central and Provincial.

All this would be Federal Legislation. In addition they recommend the enactment of consolidated public health Acts by the Central and Provincial Legislatures, to serve at least three purposes:—

(1) to bring together existing legal provisions—some 40 different Central Acts and a still larger amount of Provincial Legislation—relating to health, which are scattered over various enactments;

(2) to modify those sections of the law which will be necessary for the development of the health programme;

(3) and to incorporate the new provisions which will be necessary for the development of the health programme recommended.

While such legislation is being passed, all existing laws should be brought together.

The Financial Implications of the Programme.

In drawing up the short-term programme careful considerations has been given to the instructions of the Government of India on the financial aspect of the plan, embodied in the terms of reference.

The Committee adopted as their guiding principle: that the short-term plan must produce an appreciable improvement in the health of the people within the period it was to be completed. The other consideration was that, if the rates of expenditure incurred by the Provincial Governments on their medical and public health departments were to be taken even as an approximate guide to determine the financial limits of the proposals, any attempt to build a satisfactory scheme of health services for the people would be foredoomed. In 1939-40 the **per capita**, expenditure on these two departments together was Rs. 0-1-7 in Bihar, Rs. 0-1-9 in the United Provinces, Rs. 0-2-7 in Bengal. The highest figure for such expenditure was Rs. 0-5-9 in Bombay. In contrast with this, the **per capita** expenditure on medical and public health activities in Britain was in 1934-35, about Rs. 54-8-11, and in the United States the corresponding figure for 1938 was Rs. 51-6-0.

The expenditure incurred by a country on its health services must necessarily depend on its national income, and India compares in this respect, very unfavourably with the two countries mentioned above. As against Rs. 62-3-3 **per capita** per annum, being the income in British India, the corresponding figure for Britain is estimated at Rs. 1049-6-5, and for the U.S.A. at Rs. 1371-7-3 for about the same period.

This means that the **per capita** income of the United States is about 22 times that of India, and that of Great Britain about 17 times. Even after making due allowance for the much higher national incomes in those countries, India should spend annually about Rs. 3-3-0 per head of the population, if her expenditure on health services were to bear the same ratio to national income as in Britain.

In these circumstances, if India desired to develop a modern health organisation, a scale of expenditure much above of what the Provinces show to-day was inevitable.

Estimates of Cost

The Table below gives the main items of the estimates of cost separatly for the first five years and the second five years of the short-term programme.

NON-RECURRING EXPENDITURE

	First five years Rs.	Second five years Rs.	First ten years Rs.
1. Personal health services including the directional organisations associated with the Ministries of Health at the Centre & in the Provinces	80,88,00,000	118,64,00,000	199,52,00,000
2. Professional education	22,45,00,000	19,86,00,000	42,31,00,000
3. Expenditure on other items	50,42,00,000	50,20,00,000	100,62,00,000
	153,75,00,000	188,70,00,000	342,45,00,000
4. Centre	9,22,00,000	11,32,00,000	20,54,00,000
5. British India as a whole	162,97,00,000	200,02,00,000	362,99,00,000

RECURRING EXPENDITURE

	First five years Rs.	Second five years Rs.	First ten years Rs.
1. Personal health services including the directional organisations associated with the Mininstries at the Centre & in the Provinces	116,10,00,000	250,02,00,000	366,12,00,000
2. Professional education	32,00,00,000	35,24,00,000	67,24,00,000
3. Expenditure on other items	4,54,00,000	12,32,00,000	16,86,00,000
4. Leave reserve	7,83,00,000	15,08,00,000	22,91,00,000
	160,47,00,000	312,66,00,000	473,13,00,000
5. Centre	9,63,00,000	18,76,00,000	28,39,00,000
6. British India as a whole	170,10,00,000	331,42,00,000	501,52,00,000
Payment towards amortisation of non-recurring expenditure	25,76,00,000	74,54,00,000	100,30,00,000
Total recurring expenditure	195,86,00,000	405,96,00,000	601,82,00,000
Average annual expenditure	39,17,00,000	81,19,00,000	60,18,00,000
Average estimated population of Brit. India	315 millions	337.5mil.	326.25 mil.
Annual per Capita Expenditure	Rs. as. p. 1 4 0	Rs. as. p. 2 7 0	Rs. as. p. 1 14 0

The Committee's proposals involve, during the first ten years, an anticipated expenditure of Rs. 1-14-0 per head of the population.

The Financing of the Health Programme

Even on the modest basis proposed the **per capita** annual expenditure of about Rs. 1-14-0 during the first five years will require Provincial Governments to spend on public health measures amounts many times in excess of what they are budgeting now. The latest available figures for the combined expenditure on provincial medical and public health departments for 1944-45 are:—

COMBINED EXPENDITURE ON MEDICAL RELIEF AND PUBLIC HEALTH ACTIVITIES IN THE PROVINCES DURING 1944-45.

Province	Expenditure per capita in annas	Expenditure on medical relief and public health expressed as a percentage of total provincial expenditure
Madras	6.2	4.7
Bombay	10.9	4.5
Bengal	7.1	5.7
U. P.	3.9	4.9
Punjab	6.1	5.1
Bihar	3.2	7.3
C. P. & Berar	2.8	3.1
Assam	5.4	6.2
N. W. F. P.	7.7	5.0
Orissa	3.4	5.9
Sind	8.2	2.5

• While a small number of items of existing expenditure in the provinces on health administration will fall within the cost of the scheme, the vast majority of them will not; and, broadly speaking, the expenditure involved in the execution of these proposals will be in addition to what the Governments, Central and Provincial, are now incurring on those services.

A reference to the last column of the above table will show that the expenditure incurred by Provincial Governments on health measures, curative and preventive, constitutes but a very small fraction of their total annual expenditure, the precentage ranging from 2.5 to 7.3. On the other hand, the corresponding percentage in Great Britain during 1934-34 was 20.4 and in the United States

13.8 during 1938. It is obvious that Governments in India have, devoted an unduly small proportion of their incomes to health administration. A very modest and reasonable percentage would be 15 per cent. of the total expenditure, which should be made a statutory obligation. At least in one province (Madras) the local legislature has laid down (Section 127 of the Public Health Act) that every municipality "shall earmark not less than 30% of its income from all sources other than Government grants, for expenditure on the advancement of public health in its local area, including expenditure on medical relief, and every district board or punchayat shall similarly earmark not less than 12½% of its income from such sources."

The Committee consider it highly desirable that a searching enquiry should be instituted into building costs and the data on which Public Works Departments base their estimates. Instances were brought to their notice where private agencies had carried out new building work at less than 50% of the estimates prepared by the Public Works Departments, which reinforces the popular belief that the Public Works Departments are unduly expensive agencies for the construction of public buildings. This calls for careful investigation, as considerations having far-reaching consequences for development in many spheres are involved.

The Committee stress the organic unity of the component parts of their programme. Large scale provision for the training of health personnel forms an essential part of the scheme, because the organisation of a trained army of fighters is the first requisite for the successful prosecution of the campaign against disease. Side by side with such training of personnel, a suitable health organisation must be established which would bring remedial and preventive services within reach of every citizen in town or village irrespective of his ability to pay". The Committee "would strongly deprecate any attempt, on the plea of lack of funds, to isolate specific parts of the scheme and to give effect to them without taking into consideration the inter-relationships of the component parts of the programme. Our conception of the process of development of the national health services is that it will be a co-operative effort, in which the Centre, acting with imagination and sympathy, will assist and guide a coordinated advance in the Provinces. We therefore, look forward to a pooling of resources and of personnel, as far as circustances permit, in the joint task that lies before the Governments".

For several of the recurrent menaces to India's public health, the Bhore Committee has made specific recommendations. Some of the most considerable and significant among these are outlined here, not only as illustrating the constructive character of these proposals, but also as inidicating the lines on which immediate action is necessary.

Anti-malaria organisations in the Provinces and at the Centre.

"An essential preliminary to the successful control of malaria in India is the formation of an adequately staffed permanent Malaria Organisation in each province, the activities of which should be linked up with those of the Central Organisation of the Government of India." The Committee endorses this view of the Director, Malaria Institute, and recommends the establishment of Anti-Malaria Organisations in the Provinces as well as strengthening the staff of the Malaria Institute of India. The latter must be enabled to fulfil its important tasks of advising provincial administrations in the development of Anti-Malaria measures, of co-ordinating such work in the provinces, and of training the higher types of malaria personnel for the country as a whole.

The Committee, accordingly recommend that an organisation be created at the headquarters of each province and a number of malaria control units be established each under a Medical Officer specially trained in Anti-Malaria work, to operate in the several affected areas in the province.

The most essential requirements are:—

(a) the provision of trained staff in adequate numbers, and

(b) the supply of drugs, appliances and other equipments necessary for carrying out effectively the campaign against the disease.

The Committee, it may be added, deprecate spending large sums of money on the erection of elaborate buildings in the early stages of our programme.

Drugs for Treatment

Quinine and mepacrine are the two drugs, widely used for the treatment of Malaria. An even more effective synthetic product, paludrine, is likely to come into the field at an early date. The Committee recommend that the following three general principles should guide the production of quinine and other Anti-Malaria drugs:—

1. The prices of these drugs for the people should be sufficiently low to enable the poorest classes to obtain them in adequate amounts.

2. These drugs, wherever produced, should be available, on an equitable basis, and on reasonable terms, for the needs of all parts of the country.

3. No delay should be allowed to occur in developing their production.

As a Committee they would leave to the Governments in the country the responsibility for deciding whether private enterprise should or should not be associated with the production of these Anti-Malaria drugs. But in consonance with the spirit of their recommendations, and considering the vital utility of these materials, it would be suicidal if these essential ingredients for maintaining and safe-guarding public health in the country are left to the tender mercies of private profit-seeking enterprise.

Quinine and Mepacrine

If the estimate of 100 million individuals suffering from malaria every year is reasonably correct, it seems safe to assume that at least 120 to 150 million cases of the disease will have to be treated annually. The Malaria Commission of the League of Nations has recommended 75 grains of quinine as the minimum quantity required for the treatment of a case. On these estimates of malaria incidence in India, the amount of the drug necessary for the country as a whole will be in the neighbourhood of about 1.5 million pounds per year, if quinine is alone used for treatment. The average annual consumption of the drug in the pre-war period in India was 210,000 pounds, and of this, only about a third was produced in India. The quantity consumed every year in this country would provide adequate treatment for about 19.6 million patients. The Committee, therefore, recommend that sufficient quinine and mepacrine should be provided to meet jointly the requirements of at least 50 millions patients, as an immediate objective. The production of quinine should be raised to the pre-war level of consumption in India from indigenous bark alone; and for mepacrine, provision should be made immediately for its production in the country in sufficient amount to meet the requirements of 30 million patients.

Anti-Malarial Insecticides

The cultivation of the pyrethrum plant has been successfully undertaken in Kashmir, the Punjab Hill States, the United Provinces, the Central Provinces, Madras and Orissa. It has been estimated that, in order to make the country self-sufficient, pyrethrum cultivation will have to be extended to about 120,000 acres, so as to produce an annual output of about 15,000 tons of pyrethrum flowers.

In D.D.T. an even more powerful insecticide has come into use. As an insecticide the relationship of D.D.T. to pyrethrum is somewhat similar to that of mepacrine to quinine in treating malaria. There is the possibility in both cases of the synthetic substance replacing the use of the other. The cultivation of pyrethrum can, in this event, be replaced at short notice by other crops.

Tuberculosis

In order to provide a comprehensive and integrated service the Tuberculosis organisation should include, (1) a domiciliary service, (2) clinics, (3) hospitals, (4) after-care colonies, (5) homes for the incurable and, in addition (6) certain ancillary services.

A home isolation and treatment service.

A scheme for organised home treatment has been working in Delhi during the past few years. This scheme has attained only very limited success, the reasons being:—

1) certain difficulties arising out of the war;

2) the extremely unsatisfactory housing of the poorer sections of the community; and

3) the inadequacy of the funds made available for its working.

As part of the Anti-Tuberculosis campaign, the Committee recommend:

"Local authorities should construct and maintain a number of suitable dwellings into which the patient and members of his family can be removed. Patients among the poorer sections of the community will, on such removal, must be provided with accommodation free of charge.

The Tuberculosis Clinic.

The clinic forms the centre from which curative and preventive work in Tuberculosis will spread into the people's homes. The treatment facilities it offers will help to cure a certain number of patients, while the more advanced cases will be sent for treatment in hospital. Those patients, whose condition is too advanced for attendance at the clinic, will receive domiciliary treatment from the medical and nursing staff of the clinic. During visits to the home the patient will be advised, by the doctor and the nurse, to carry out effective isolation, contacts will be persuaded to attend the clinic for examination and early detection of the disease, and steps will be taken to promote the welfare of patients and their families by establishing contact between them and voluntary organisations interested in welfare work.

Tuberculosis Hospitals

The provision of sufficient hospital accommodation to meet the requirements of the country is bound to take many years and therefore in the early stages, only such patients as are likely to benefit should be admitted to hospitals.

Our proposals for the development of hospitals and clinics during the short-term programme are given below:—

Institutional Service. The first five-year Period.

1) the establishment of a 200-bed tuberculosis hospital for each unit of 10 million population;

2) the establishment of a large clinic (to be designated the "Main Clinic"), with facilities for the training of medical and non-medical tuberculosis personnel, at each

of the places where the 200-bed hospital will be created, and

3) the establishment of clinics of a smaller type at the head-quarters of each district in British India. The total number required, after deducting the 33 main clinics, will be 183.

Second Five-year Period

1) 33 more 200-bed hospitals;

2) 33 more main clinics at the same places where the new hospitals will be located and,

3) 183 more district clinics.

The clinics and hospitals can serve only limited areas roundabout where they are located. Even so, in these limited areas, a Domiciliary Tuberculosis Service should be organised in association with each clinic. A certain number of suitable cases will be sent by the clinic to the nearest Tuberculosis Hospital for more satisfactory treatment than can be provided locally.

After-care of Patients

In many cases tuberculosis patients do not completely recover their previous health, and are likely to suffer a relapse. Such persons should not be subjected to strenuous working conditions, and their environment should be hygienic on their return from hospitals. For this purpose after-care colonies should be established in close association with every tuberculosis hospital.

Homes for Incurables

To provide comfort to the patients in their final phase of sickness, it is recommended, that, Government with the help of philanthropic or religious organisations interested in social welfare, should undertake the building and equipment of institutions where such patient will be looked after.

Travelling Tuberculosis Units

Provision of travelling tuberculosis clinics based on District Clinic and working as far into the rural areas as possible, is one way of extending the activities of the Tuberculosis Organisation. These units should have motor vehicles equipped with all the necessary drugs, appliances etc. including X-Ray Apparatus, to enable them to carry diagnostic and treatment facilities of a reasonably high order to the areas served by them. They should have a fixed itinerary and should make about 3 to 4 visits per month to each of the 30-bed hospitals and dispensaries at the headquarters of individual primary units in the areas under the scheme.

Cholera—Permanent Meausures

In the sections dealing with water supply and general sanitation, comprehensive, programmes of developing such facilities in urban and rural areas have been suggested. These are basic requirments in the fight against Cholera; and in providing them, Provincial Governments should indicate relative priority, on the grounds of guarding against Cholera in individual towns and villages. In this way, the main centres of Cholera prevalence can be brought under effective control, and the spread of the disease from such sources of infection prevented.

Simultaneously with these improvements the gradual extension, over the country as a whole, of the health organisation suggested would help to introduce a large measure of control over the food of the people, to ensure freedom from contamination. There will also be a rise in the general level of environmental hygiene. The combined effect of all these measures is bound to be a marked reduction in the incidence of Cholera and other bowel diseases.

Temporary Measures

These temporary measures should be carried out by the Primary Unit Staff as effectively as possible. with the active assistance of the Village Health Committees.

Pilgrim Centres

Pilgrim Centres have, in the past, played an important part in the spread of Cholera. The adoption of special measures for safeguarding the health of Pilgrim Centres has now become an established practice in the country. In addition it has been found useful to enforce the compulsory inoculation of persons against Cholera before they are permitted to attend such festivals. At the instance of the Central Advisory Board of Health, this measure has been carried out by a certain number of Provincial Governments in selected festival centres with encouraging results. The adoption of this measure on a wide scale should prove to be an additional precaution against the possibility of outbreaks of Cholera starting in festival centres.

Venereal Diseases

The measures which are necessary for the control of these diseases may be divided into two broad groups, namely, (1) those which provide the best available forms of medical care, preventive and curative, and (2) those which are designed to discourage promiscuity and to control prostitution.

The Committee's recommendations under (1) include th provision of free and confidential treatment to all persons seeking such treatment, of facilities without payment of fees for personal prophylaxis, and of adequate facilities for the diagnosis of these disases, as well as the creation and maintenance of a follow-up service and educational work among the people in regard to their spread and control.

Measures designed to discourage promiscuity and to control prostitution are obviously more difficult to devise and enforce than the medical measures recommended above. Education in a wide sense of the term, so as to promote the growth of the individual's moral sense and of his responsibility towards himself and the community, and sex education intended to create a correct appreciation of the problems of sex relationship and to impart knowledge regarding the spread of venereal diseases and the dangers that arise from them, must together provide the conditions essential to secure the success of any attempt to control indiscriminate sexual intercourse, whether it be in the restricted field of prostitution or outside it. Gradual provision of sex education has been proposed to all sections of the community, such provision starting first with teachers in training schools and colleges, and, through them, extending to school children and college students. Steps for controlling prostitutions are also suggested, including enforcement of severe penalties on those who keep brothels, and on landlords who promote the use of their premises for this purpose. As regards the prostitute, the Committee's recommendations are intended to provide her with adequate medical treatment for venereal diseases as well as to help her, through educative work, to return to the normal mode of life."

These recommendations have not yet (January, 1948) been implemented. But the opinion or intentions of the Government of India on the subject may be deduced from the following summary of a Convocation Address delivered to the College of Physicians and Surgeons by the Director-General of Health Services on the 9th of January, 1948.

"The objective of a national health programme should be to provide the individual with adequate curative and preventive medical facilities, not in relation to his capacity to pay for such facilities but in relation to the requirements of his physical and mental condition.

"In establishing an efficient health organisation, preventive and curative measures should be properly integrated, and domiciliary and institutional services provided for the people should work in the closest possible co-operation. Our health programme should lay emphasis not only on diseases and on methods of dealing with it, but it should concern itself with the promotion of positive health.

"The implementation of the Bhore Committee's recommendations, would involve an expenditure of Rs. 1,000 crores in a period of 10 years. Though the financial resources of India at the present moment would not permit this expenditure for some time we could not sit idly. The altered conditions demanded a reconsideration of the whole situation to enable the carrying out of necessary measures for medical relief and public health to meet conditions brought to the notice of the country in the Bhore Committee's Report. A fourfold health programme was, therefore, put forward which should make provision for (a) training of medical and ancillary personnel; (b) expansion of existing health services; (c) the promotion of medical research, and (d) education of the people to preserve their own health through the practice of personal and communal hygiene.

"Next in importance is the great need for training of non-medical workers. These could, with adequate supervision by doctors, be made to perform a wide variety of curative and preventive duties in a well organised health programme. Preventive inoculation, sterilisation of water supplies, elimination of flies, mosquitoes and other insect pests were all measures which could be undertaken by persons with relatively small periods of training. This is all the more necessary because the cost of their training is relatively less than that required for medical education.

"With regard to medical education, it was desirable to raise the number of colleges, but the more urgnt need is to raise the admissions to individual colleges. This can be done by providing a double shift of classes for laboratory subjects. For the clinical instruction of the additional students, we must utilise the existing hospitals in cities, where medical colleges exist, not so far utilised at present. Such an arrangement would facilitate quicker out-turn of doctors per year at a relatively cheaper cost than by a further increase in the number of medical colleges in the country.

Expansion of Health Services

"For expanding the existing health services, there must be "coalescing" of the Medical and Public Health Departments in the provinces into a single organisation, so that the fullest possible measure of co-operation between the two branches of health administration may be secured. Without such co-operation it is not possible to develop reasonably good services in many fields, for example, maternity and child welfare work, control of infectious diseases, including tuberculosis and venereal diseases and supervision of health of school children.

Medical Relief in Rural Areas.

"The Provincial Governments should set up an organisation to carry expert medical advice to the remoter areas in a district which would be the unit of health administration. A mobile team consisting of a well-qualified physician, a surgeon, a gynaecologist and obstetrician, an ophthalmologist, an aural surgeon and a clinical pathologist should be available for service in two adjoining districts in the first instance. Later its range of jurisdiction might be reduced to a single district. This scheme will have the merit of bringing expert medical relief near the doors of the rural population, which forms such an overwhelming part of the inhabitants of the country. Such a mobile team could visit selected centres in the Districts where temporary hospitals in tents provided for the purpose, could be housed. These mobile hospitals could be shifted from centre to centre in the Districts every few weeks, so as to bring specialised medical relief to remote village areas as far as possible.

. "In view of acute shortage of steel and cement so essential for construction of permanent hospital structures, we should concentrate on constructing 30-bedded Primary Health Centres or small Dispensary Hospitals, about 2,500 of which would be needed for the whole country to meet the short term programme recommended by the Bhore Committee, in different parts of the country. Such centres, including housing for the medical, nursing and other staff, should be constructed of sun dried bricks rendered with mud plaster like the other village buildings in the north of the country. In other parts of the country such structures may mainly consist of ballies, bamboos and chattis with tiled or thached roof. If Primary Health Centres could be constructed out of local materials available in rural aras; and if the assistance of the village people is sought in constructing them, the cost of construction would be considerably reduced, and the recommendations of the Bhore Committee for extended medical relief more speedily put into effect than is otherwise possible. Such structures would last 10 to 15 years, by which time it might be possible to put the long-term programme of the Bhore Committee recommendations into effect.

The services of practitioners of indigenous systems of medicine could also be utilised for a wide variety of functions, particularly in the preventive field, with adequate training given to them either as part of their curriculum or at a later stage before admission to public service."

Medical Research.

As for medical research, Dr. Mehta considers small duty on drugs and medical appliances entering the country from abroad could be imposed to provide recurring source of revenue to facilitate and promote such Research. Apart from the Central Government, Provinces should also contribute their share to the cause of medical research.

Health Education

Health education, could not be divorced from general education, which included the training the individual began to acquire at home from the early period of his life, as well as the training he received at his school and in later life. The health education programme should be so extensive as to influence the individual through every stage of his life. Even so, infancy and childhood were the periods during which the individual's main habits were formed, and the health education programme should concentrate on the teaching of the parents, particularly the mother, to impart proper training to the children, as well as on the teachers who could influence materially the formation of habits in children at an impressionable age. Health education could produce its most lasting effects if it were grafted on to general education both for children and adults.

K. T. SHAH.

Printed by R. R. Bakhale, at the Bombay Vaibhav Press, Servants of
India Society's Home, Sandhurst Road, Girgaon, Bombay
and
Published by M. K. Vora, for Vora and Co. Publishers Ltd.
3, Round Building, Kalbadevi Road, Bombay 2.